PHOTOFACT* FOLDER SET

*TRADE MARK

NO. 76

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The PHOTOFACT Servicer

November 1, 1949 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 8, Nos. 75 &76

"YOUR MONEY'S WORTH AND - THEN SOME!

In arranging sets of PHOTOFACTS we have always examined the content of a single set of folders critically. We have tried our best to balance out the sets - to see that some proper proportion of AM - FM, AMPLIFIERS, TV, RECORD CHANGERS and "what-have-you" was maintained. But our efforts and desire to keep on an even keel are not wholly successful. Darned if the manufacturers and YOUR public don't have a LOT to do with it. Right now - AM - FM sets are scarce - combinations are few and far between - TV is on the rampage and the rest of the stuff is about NORMAL. Our policy is to make EVERY SET OF PHOTOFACTS WORTH ITS COST OF $1.50 - "and then some". That's why you will find EXTRA value, - PLUS value every now and then - value that costs you nothing but makes your $1.50 do "noble" duty. For example, in SETS Numbers 77, 78, 79 and 80 you will get a PHOTOFACT Folder covering a popular record changer as a dividend. And no matter what the content of a Set of PHOTOFACTS might be,- all you have to do is service one set that's covered and you've made more than the Set of PHOTOFACTS cost in time saved and in satisfaction to your customer. That's what we mean when we say - YOUR MONEY'S WORTH AND THEN SOME."

CORRESPONDENCE OF INTEREST

ALIGNING TV IF WITH AM SIGNAL GENERATOR

The Managing Editor of a leading Radio & Television Magazine writes: -

"Dear Howard:

"We have had a few manuscripts on aligning a television IF with an AM signal generator. Theoretically, by peaking the various IF's at their own frequency, a curve which closely approaches the desired one can be achieved. This is done regularly as a preliminary to checking with the sweep generator. However, a couple of authors are suggesting its use by service technicians who have no sweep generator.

"Experiments with the one television receiver conveniently accessible to us leads us to believe that this would result in some very peculiar curves.

"Some of the technicians who were queried on the subject stated that 'most sets' line up O. K., but that they run into the occasional one that will not respond to the AM signal generator.

"Has your attention been directed to this situation any time and, if so, what results have you had?"

"Bill" (W. W.) Hensler, our chief TV Engineer, replied: -

"Our experience has paralled yours very closely in regard to alignment of TV receivers with an RF signal. As you have probably noted, our alignment procedure in PHOTOFACT Folders usually gives a preliminary alignment using an RF signal. A check on this alignment is then made using a sweep signal. This enables the serviceman to obtain maximum sensitivity, and by the use of sweep generator to also obtain maximum band pass. Also it enables the serviceman that does not have sweep equipment to do a satisfactory job of alignment.

"The use of an RF signal will, on some receivers, give a peculiar curve as outlined in your letter. This is usually due to a weak stage in the IF amplifier, causing a dip in the curve at that frequency. As a rule, however, the alignment is satisfactory and is certainly better than performing no alignment at all. This procedure, however, does not work satisfactorily on overcoupled IF's, and in this case a sweep driven generator should always be used."

We thought you would be interested.

"AIR COLUMN-SPEAKER"

(Once before we quoted a swell article from ELECTRONIC MARKETS - a small monthly published by Research Department of ELECTRONICS Magazine. Wallace B. Blood, the manager of ELECTRONICS, pushes a "mean" pen. His article - "Air Column-Speaker" we thought particularly timely - so we've reprinted it in part; - we hope, - for your enjoyment.)

"Recently The Dean of New York dramatic critics took time to tell off television. It was quite a piece - the best we have read of the explanations by theatre and movie people of why television is going to be such a dismal failure.

"Of course The Dean writes for pay, and his is a theatrically minded audience which will applaud his stuff. But his criticism smells like a long-occupied hotel room. It just isn't fresh air. Columns such as his are widely syndicated, and their messages believed.

"This is no place to differ with his opinion that programming is lousy. It is up to the broadcasters to tell him that television lifted Milton Berle out of the cafes into a household rage and a fast grab by the movies, that that man Godfrey tacks television onto his radio successes to swell an already bloated income up to around a half million, that the roller derby emerged from a two-bit freak show into a country wide rage.

"It is up to the set manufacturers to tell him, and a lot of other writers and the public in general that television is, technically, a pretty fine thing.

"Here are things the public does not know, and it is not being told.

"1. That television is not a new kind of radio which will eventually be packaged at $19.95.

"2. That the advertisements for indoor antennas may not mean what they say.

"3. That there is nothing inherent in a television receiver which makes it necessary to have distortion, flicker, scratches and tears (pronounced like bears).

"The Dean thinks television actors look like dwarfs and that the plays look as though they were being done in a drizzle of rain, that the girls in the shows look as if they should take the pills recommended by the sponsors.

"We have a mental picture of the television installation The Dean has looked at. The set was built a couple years ago in a loft from indiscriminate parts and sold in a bargain basement at a 'stupendous saving.' It was installed in a steel-girder building by the corner radio boy who whipped up an indoor antenna connection which he 'guaranteed' was as good as the finest roof dipole. If a person has a television installation such as that, they are either satisfied with it, take morbid pleasure in being annoyed, or haven't got the dough to buy a t-v as it can be.

"The new television receivers should be practically free of distortion. There should be no rain-drizzle effect, nor should the women look like hangovers in search of an aspirin bottle. They will also be sold at a leveled-off price which will not go down for some time.

"But, the way things are going now, there will be a great many very fine sets so poorly installed that they might just as well be no better than the sets of prewar. Television design engineers who read the current advertising must be bent over with a perpetual bellyache. Why is it that the retailing end of the electronic industry forever tries to tell the public that it is selling something which doesn't exist? Why is it that they say they have engineered the impossible?

"People actually believe today that, no matter where they live, they can buy a t-v set with built-in antenna, or stick up a portable criss-cross and turn on the switch for perfect reception. Let's take the very best 1950 set. It's sensitive as all get out - a super amount of rf gain. It's got a distortion-free tube and it shades the grays so that the gals do look pretty. What can happen to the performance of that set?

"Put it a few miles out on a hill top from which you can see the transmitter's tower and go ahead with your indoors or built-ins. They will serve well. Now take that same set down into the bowels of a canyon, or install it in back of a modern big city apartment. You can get anything - but good reception - ghosts, snow, tears, lattice and combinations.

"Here is the danger of this over-stressed advertising. The new sets are better sets, they are much better than those of a couple years ago. But it is conceivable and probable that many of these new sets when installed will give no better performance than the neighbor's old one. Why? Because the neighbor is up in the air with an aerial and his weak-pickup set is as good as the strong-pickup set of the guy with indoor aerial.

"Get farther out and, brother! We are fifty miles out of New York. We get good reception on a little table job. At least, the neighbors think we get wonderful reception. A fellow down the block laid out $785.00 for a straight t-v a few months ago. After he saw our signal he damned the maker of his expensive job. Here is a case, which has innumerable counterparts, of the maker of one of the finest t-v sets getting a black eye when he was blameless. The installer, who wanted to get the most bucks for least expense, had put up an aerial which would have been just fair at ten miles out. We have a $35.00 dollar aerial, well up in the air. Though it looks like a Goldberg cartoon, it pulls in a signal all the way.

"A lot of this mess is due to the installation-guarantee twist, which was foolish in the first place. An automobile in New York costs more than an automobile in Detroit because of the f. o. b. deal. A good manufacturer would save face by urging a new deal on his fringe-area dealers. Up the installation cost and tell the buyer why, or let the buyer select his antenna from those proved to be good for the district, and pay an erection and test fee. By this method, good sets won't be criticized because of inefficient overhead.

"TV set manufacturers should be alarmed by these things. There is going to be an immense amount of fringe and near-fringe area business. The manufacturer who makes his dealers and service men put up good overhead will cop the market in the area.

"As this is written we are starting into our first full-production buying season. The summer programs have been consistently poor, as they always have been in radio. The motion picture business, the theatre racket, radio and newspaper advertising people hate our guts. The Dean and other widely-read syndicated writers pan us - and yet we indulge in price wars, make cockeyed claims for indoor aerials, lead the public to wait for $19.95 sets, allow sloppy installations, and come up with advertising blurbs that because such and such a company is discontinuing ten-inch sets it is selling its on-hand stock at half price.

"Did you ever see an advertising campaign which indicated that Ford Motors was discontinuing a line - come in and get the overproduction at half price? When a set manufacturer allows advertised cut prices, permits his dealers to erect inefficient antenna, and by his stupendous claims leads his existing owners to believe he has an out-dated abortion, that set manufacturer loses caste. It will pay off backwards next year. - WBB"

TELEVISION TECHNICIANS LECTURE BUREAU

Last year we sponsored a series of lectures by Al Saunders in twenty-seven cities, - to our knowledge the FIRST NON-COMMERCIAL lectures ever to be sponsored by a single concern. Over ten thousand radio service technicians heard these lectures and in almost every city a new high in attendance was recorded.

Paul H. Wendel - was in charge of the tour.

Paul completed his work with us on June first, and immediately set out to organize the TELEVISION TECHNICIANS LECTURE BUREAU. As this is written (September 17, 1949) his first lecture is being presented in a group of Eastern cities. The men associated with him in his company are not new to our industry but are recognized authorities with a background of experience in the servicing field that commands your respect.

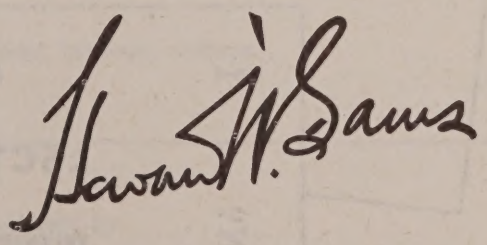
While we have not had an opportunity, as yet, to attend any of Paul's lectures - we do know that a sizeable investment has been made in developing new ways of showing electronic circuits that we predict will obsolete present methods of illustrating lectures.

Should you be interested in knowing when the Bureau will lecture in your vicinity - simply drop a card to -

Paul H. Wendel
55 East Washington Street
Chicago 2, Illinois

and you will be notified.

GOOD LUCK - SUCCESS - and SINCERE BEST WISHES TO YOU, Paul, and to my good friends, Al Saunders, Walt Jones and Ed DeNike.



TELEVISION TECHNICIANS LECTURE BUREAU

INCORPORATED

Information and Education for the Radio and Television Service Industry

1426 G Street, N.W., Washington, D.C. 55 E. Washington Street, Chicago 3, Ill.

September 6, 1949

Mr. Howard W. Sams
Howard W. Sams & Co., Inc.,
955 North Rural Street
Indianapolis, Indiana

Dear Howard:

It gives me great pleasure to present you with ticket #1 for Lecture #1 in the Bureau's series of practical lectures for radio and television service dealers and technicians.

Howard, you are indeed the Godfather of this idea to give the practical technician the benefit of hearing the Industry's best lecturers speak freely on the problems of radio and television service without the obligation imposed by Manufacturer or Publisher sponsorship.

Last year when Al Saunders and I wanted to experiment with a series of lectures, completely non-commercial in nature, to see whether technicians would attend that type of lecture presentation, you said, "Swell, I think it is a splendid idea. Go to it."

When you saw how men crowded the halls where Al spoke and after hearing his lecture said, "Why can't we hear more lectures by Al Saunders and other men like him who know our problems and have nothing to sell us but ideas we can use?", you said to me, "Paul, when are you going to break loose from this organization and all other commercial affiliations and carry out that idea you've been nursing for so many years?"

Last Winter when I told you that Walt Jones, Al Saunders and I were starting to work on the Lecture Bureau program you said, "Wonderful. Please feel free to use any or all of the facilities of the Photofact organization for material that you may need and that we can supply".

Your organization has been most helpful without any thought of special considerations in these lecture presentations.

So, for Walt Jones, Al Saunders, Frank Lazenby, Ed DeNike and myself, I want to say - Thanks a million.

Sincerely

Paul H. Wendel

Paul H. Wendel

PHW/s

E. DeNIKE
cutive Director

HOLD THIS STUB

TICKET No. 1

ADMIT ONE

to

LECTURE NUMBER ONE

of

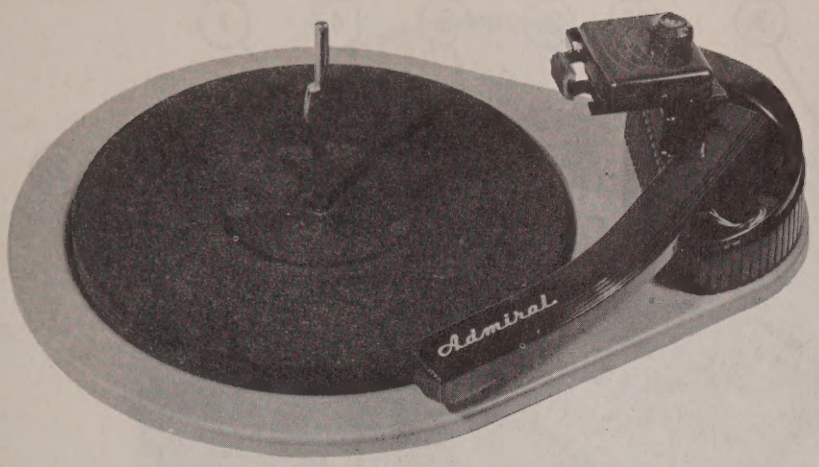
TELEVISION TECHNICIANS LECTURE BUREAU

Information and Education for the Radio and Television Service Industry

PRESS

ADMISSION FEE $2.00

TICKET No. 1



MODEL RC180

MODEL RC181

ADMIRAL
MODELS RC180 AND RC181

ADMIRAL
MODELS RC180 AND RC181

GENERAL INFORMATION

The Models RC180 and RC181 record changers are single-post changers designed to play automatically up to twelve 10-inch records or ten 12-inch records, not intermixed. The last record will be repeated until the changer is turned off.

The only difference between the RC180 and RC181 is the shape of the pan.

Manufactured by

ADMIRAL CORPORATION, 3800 CORTLAND STREET, CHICAGO, ILLINOIS

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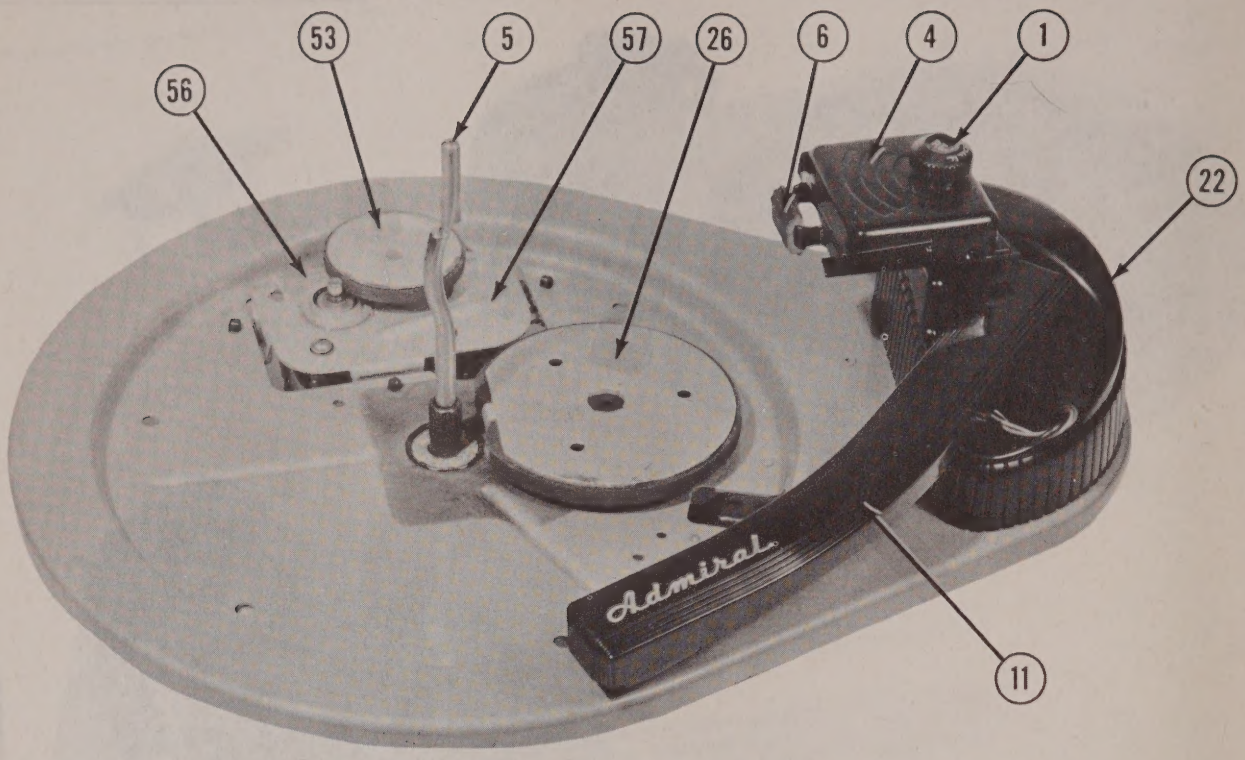

FIG. 1—TOP VIEW

SETTING FOR SIZE OF RECORD

The size of the record for which the changer is set to play is indicated by the embossed design on the head cover (4). When the design is facing the spindle, the changer should be set for 10-inch records. With the embossed design away from the spindle, the changer is set for 12-inch records.

To change the setting, rotate the head in either direction until it snaps into position.

LOADING AND STARTING THE RECORD CHANGER

After setting the record changer for the size of records to be played, move the record clip (6) away from the spindle and place the records on the spindle (5). The records are supported by the shoulder of the spindle and the record support shelf (9).

Move the record clip so that it rests on the top record. Turn the "On-Off" switch knob to the "On" position; then press down on this knob momentarily. The changer will now play the entire stack of records.

To reject a record at any time while playing, press down on the "On-Off" switch button (1).

REMOVING CARTRIDGE AND NEEDLE

Since the Admiral Cartridge is a plug-in type, it may be removed from the cartridge holder by placing your finger nails, or a small screwdriver, under the back edge of the cartridge, and pull down. Press new cartridge into place again, making sure to push near its back edge where its pins go into the socket.

CHANGE CYCLE

The changing mechanism may be set in motion by one of two means:

1. When the "On-Off" reject knob (1) is pressed down, it causes the push-off cam and shaft (7) to move the reject link (72) down, which, as a result, pivots the trip lever (74) far enough so that the trip stop wire (73) is no longer engaged with the stud on the control cam (52). This allows the cycle spring (66) to pull the control cam clockwise (bottom view). Since the control cam and the drive wheel (26) are on the same shaft, the drive wheel is brought into engagement with the knurled hub of the turntable. This starts the changing mechanism.

2. As the pickup arm moves into the eccentric groove of the record, the oscillation of the pickup arm causes the pawl (43A) of the arm control lever (43) to engage the trip serrations (70). This engagement straightens the pawl, and, as a result, moves the trip lever (74) far enough so that the trip stop wire (73) is no longer engaged with the cam stop stud. The drive wheel (26) is now pulled into engagement with knurled hub of the turntable which drives the changing mechanism.

The drive wheel (26) and the control cam (52)

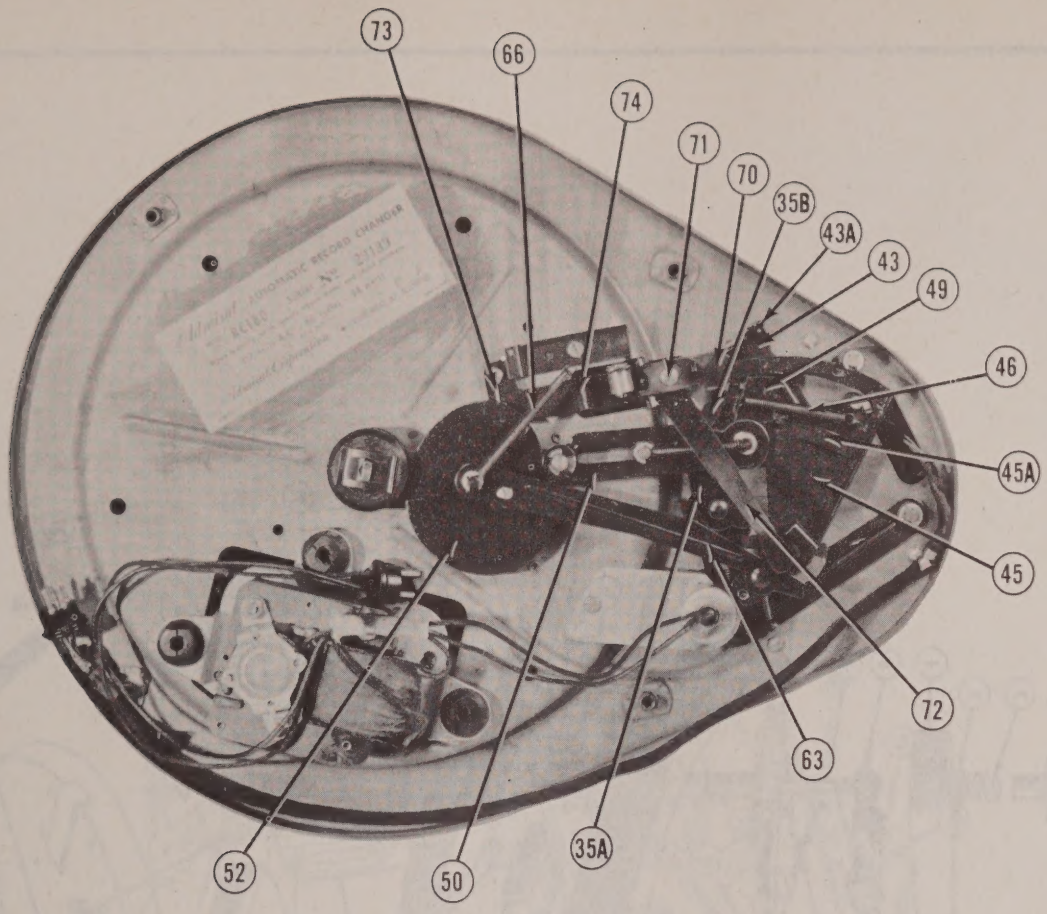

FIG. 2—BOTTOM VIEW

rotate as a unit since they are on the same shaft. As soon as the changer has been tripped, the trip cocking spring (67) causes the trip lever (74) to return the trip stop wire (73) to the normal playing position.

Roller (51) riding on the control cam moves the pivot link (50), which, in turn, rotates the control plate (45). As the control plate moves, the incline tab (45A) rides against the lift rod (17), which, in turn, lifts the pickup arm from the record. The safety arm (49) lifts the pickup arm from the record. The safety arm (49), which is pivoted from the control plate, now engages the arm control lever roller (43B), causing the pickup arm to move out clearing the records.

Also, as the arm control lever (43) is moved out, roller (43C) of the control lever contacts and moves the set-down arm (35A).

The stud on the bottom of the control cam (52) now engages with the end of the slot in the push-off link (63), moving it. This action moves the push-off arm (63A) which, in turn, rotates the push-off cam and shaft (7). This movement of the push-off cam slides the push-off plate (10) forward, which, as a result, drops the next record to the turntable.

As the control cam continues its rotation, the pivot link (50) moves back following the cam, since the roller (51) is held in contact with the cam by the control plate spring (75). This moves the control plate (45) back. The set-down arm (35A) moves the arm control lever (43) and, in turn, the pickup in for set-down. The step on the set-down arm (35A) holds the pickup arm at the set-down point until the set-down arm is pushed back by the edge of the control plate engaging the set-down arm stud (35B). At this point, the pickup arm is free and is lowered to the turntable as the lift rod (17) moves down the incline tab (45A).

Spring (75) pulls the control cam (52) around until the stud on the cam contacts the trip stop wire (73), thus holding the drive wheel (26) in a neutral position, preventing the tire of the drive wheel from making contact with knurled hub of the turntable.

DETERMINATION OF THE SET-DOWN POINT

When the record changer is set to play 10-inch records, the set-down arm (35A), through the tension of the set-down spring (37), moves the arm in toward the spindle. This lengthens the distance the arm return roller (43C) has to travel before it reaches the step on the set-down arm (35A).

When the changer is set for 12-inch records, the size change eccentric (42) moves the set-down and size change assembly (35) so that the arm return roller and stud (43C) does not travel as great a distance along the set-down arm (35A) before it reaches the step.

ADJUSTMENTS

Set-Down Point

The set-down point, for either 10-inch or 12-inch records, is made by the adjustment screw (12). Turn-

A PHOTOFACT "EXPLODED" VIEW

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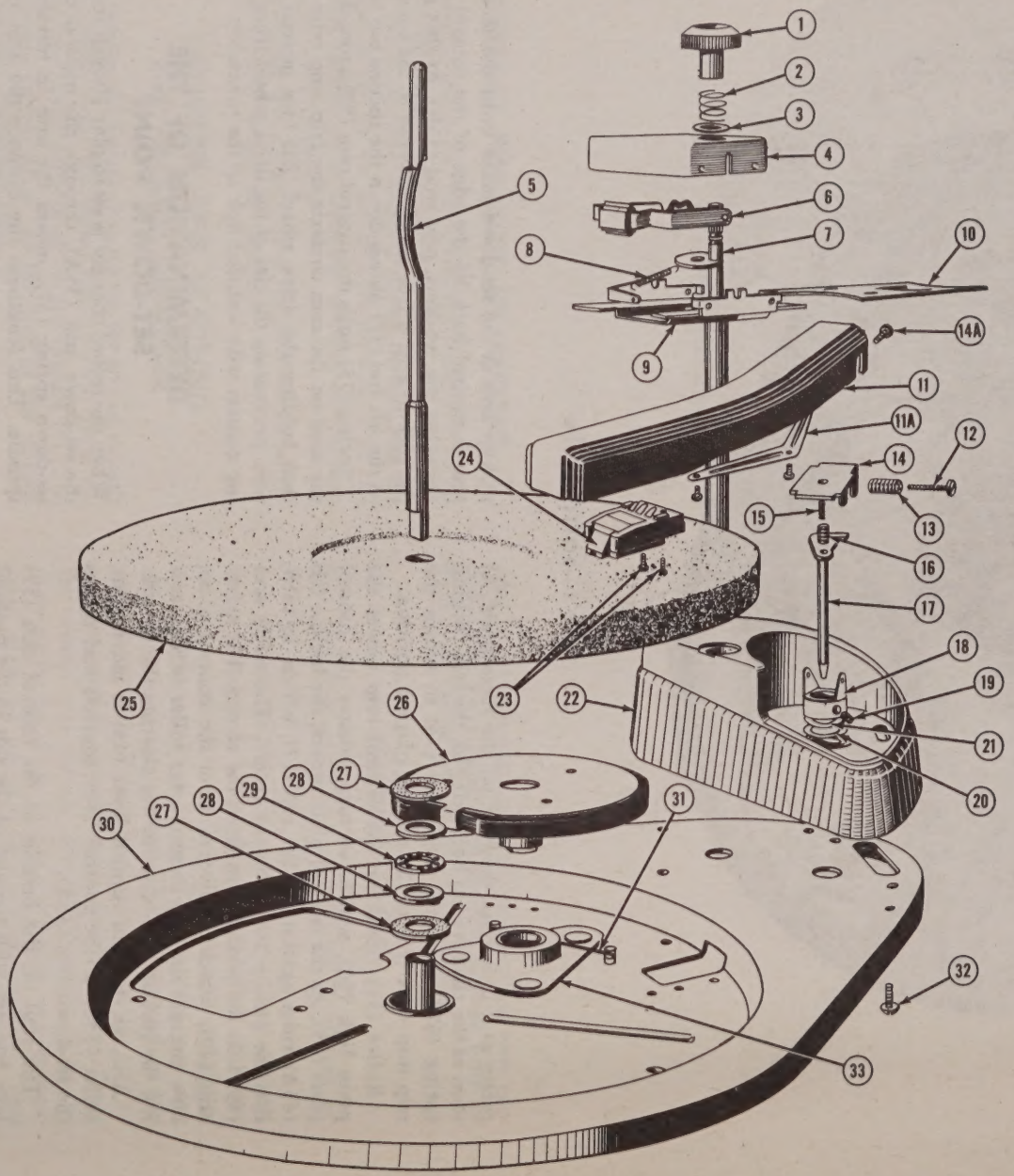

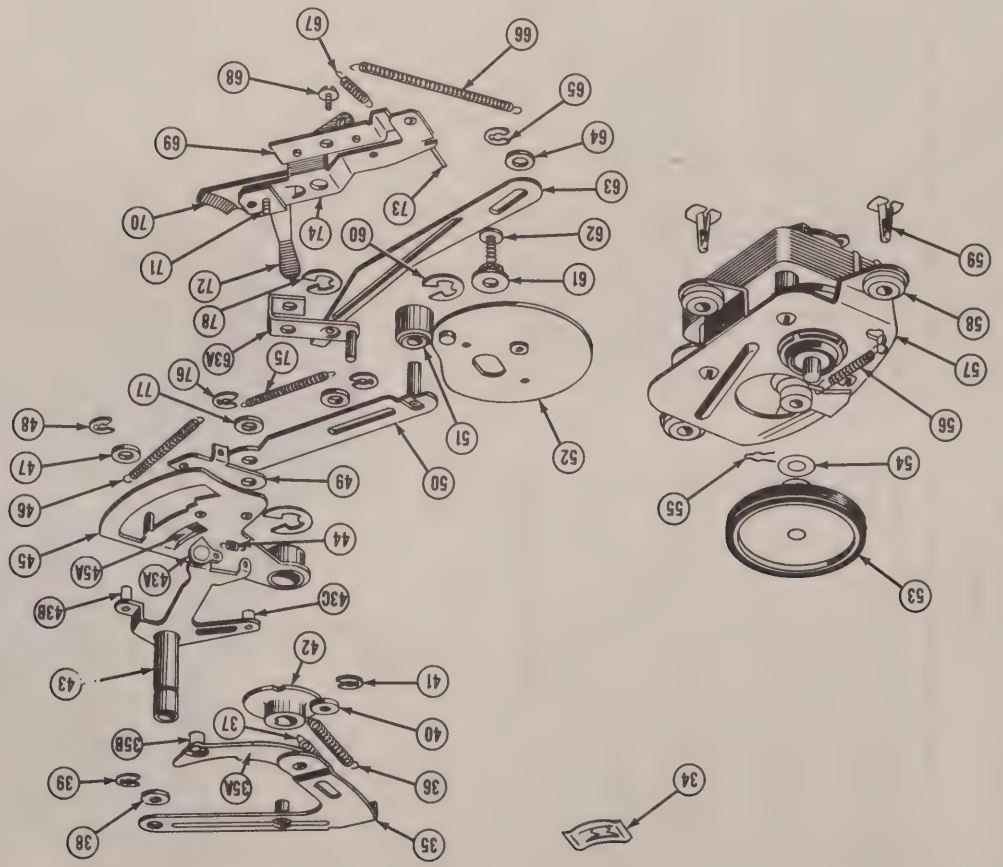
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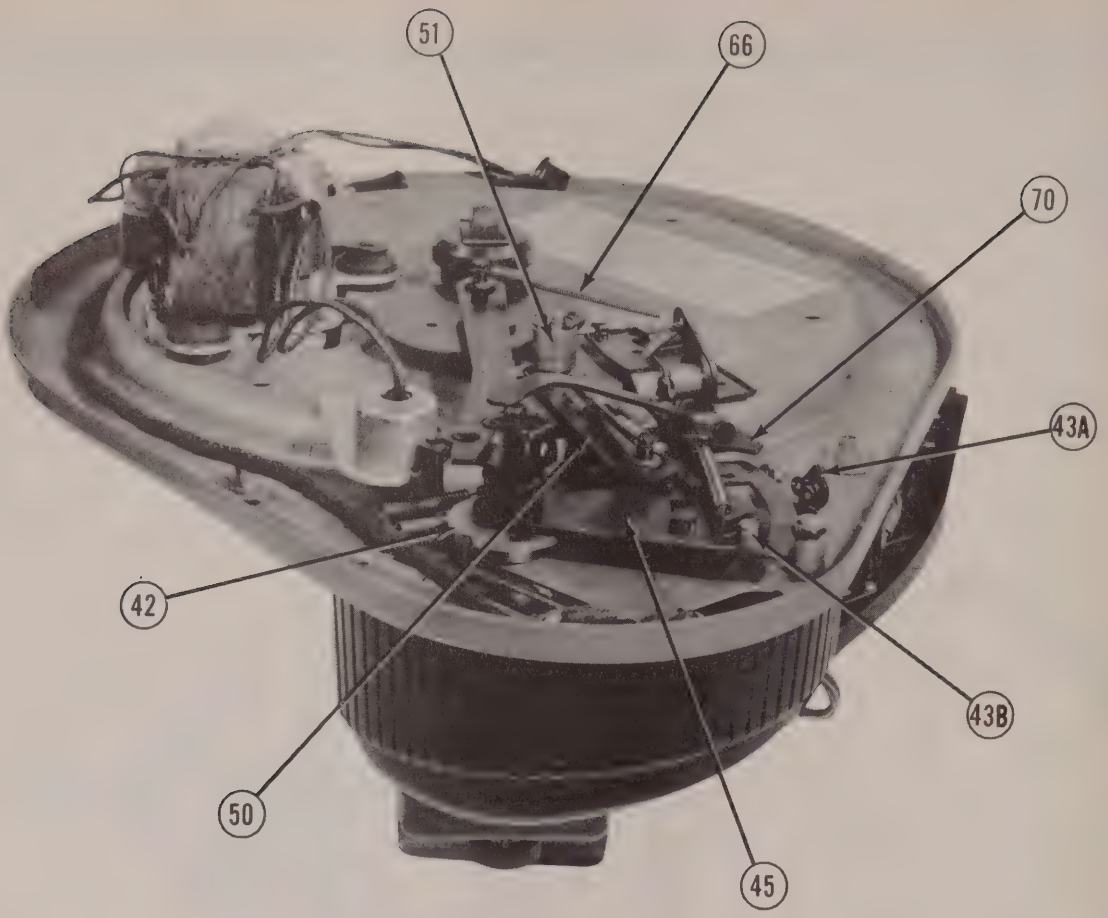


FIG. 3—BACK VIEW

ing the screw in moves the set-down point of the pickup arm farther away from the spindle. Turning the screw counterclockwise moves it closer to the spindle. Correctly adjusted the needle should land approximately ⅛ inch in from the edge of the record.

If the pickup arm and lift rod (17) have been removed, the following adjustment will have to be made:

1. Tighten the set screw (19) enough so that the pickup arm will be actuated during the change cycle.

2. Place a 12-inch record on the turntable.

3. With the power plug out, press down on the reject knob (1) and rotate the turntable clockwise until the pickup arm just barely starts to lower to the turntable. At this point, the horizontal movement of the arm control lever (43) is fairly stable due to the engagement of the arm control roller (43C) in step of the set-down arm (35A).

4. Loosen the screw (19) and move the pickup arm so the needle is approximately over the starting groove of the record.

5. See that the hub (18) is fairly seated on the retaining ring (20), then tighten the set screw (19).

6. After this adjustment has been made, put the changer through a complete change cycle and observe the landing of the pickup arm. A finer adjustment is made by the adjustment screw (12) as described in the first part of the adjustment on the "Set-Down Point."

Pickup Arm Height

Before any adjustment is made, check the cartridge to see if it is all the way in its holder, and that the needle projects 1/16" from the cartridge. This changer is designed so that if the pickup arm rests ¼ inch above the changer pan (30), the arm will automatically lift high enough, during the change cycle, to clear the top record of a stack of twelve 10-inch records and will not hit the bottom record of a stack to be played.

With the changer out of cycle and the pickup arm clear of the turntable, adjust screw (15) until the needle is ¼ inch above the changer base. Turning this screw clockwise lowers the arm, while a counterclockwise rotation raises the arm.

Trip Adjustment

This changer employs the oscillating type trip to begin the change cycle; therefore, it is necessary that the trip adjusting screw (71) is properly adjusted to insure correct operation of the changer.

If the trip adjusting screw is turned out too far, it will take more than two backswings of the arm to trip into cycle. If the screw is almost all the way out, the changer will not trip.

To adjust the trip mechanism, turn the trip adjusting screw (71) in or out until the pawl (43A) of the arm control lever (43) is horizontally even with the smooth side of the trip serrations (70).

CAUTION: If the screw is too far in, there will be excessive drag and wear on the trip serrations, pawl

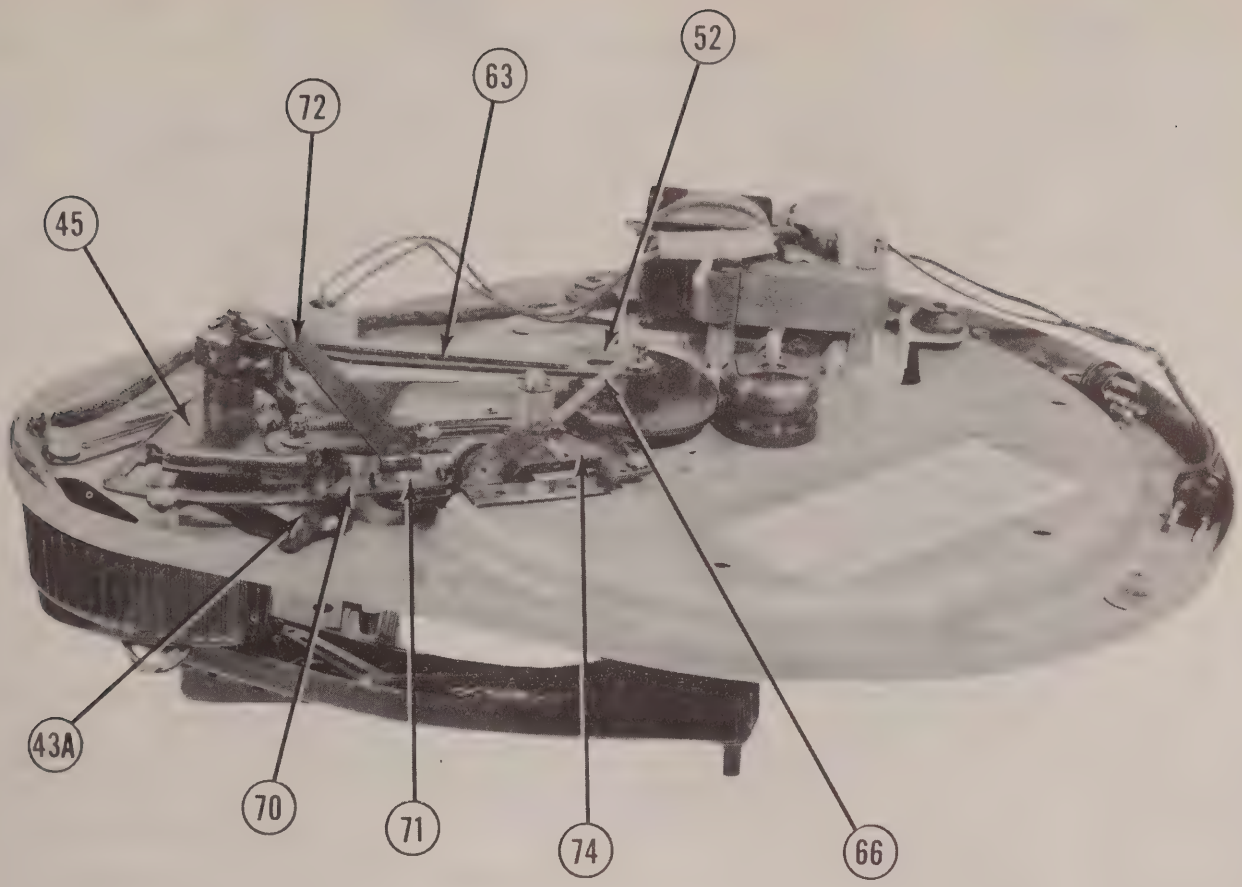


FIG. 4—SIDE VIEW

point, and the record eccentric groove. Consequently, this adjustment should be made carefully.

TROUBLES

Pickup Arm Does Not Set Down on Record Properly

1. Pickup not adjusted properly. See adjustments on "Set-Down Point."
2. Screw (19) loose, thereby allowing the lift rod (17) to move in the pivot hub (18).
3. Arm control lever (43) binding.
4. Set-down spring (37) loose.
5. Index spring (36) loose.

Pickup Arm Does Not Move Out at the End of the Change Cycle

1. Safety spring (46) loose.
2. Screw (19) loose. See "Set-Down Point" to re-adjust the arm.

Continuous Tripping

1. Spring (67) missing. This allows the trip lever (74) to stay in a raised position, preventing the trip stop wire (73) from blocking the control cam (52).
2. Trip stop wire (73) bent upward.
3. Trip lever (74) binding on the trip bracket (69) stud.

Failure to Trip

1. Trip stop wire (73) bent down, keeping the control cam in a blocked position.
2. Spring (66) loose.
3. Trip screw (71) out of adjustment. See "Trip Adjustment."
4. Reject link (72) bent. This condition prevents the changer from being tripped when the reject knob (1) is depressed.

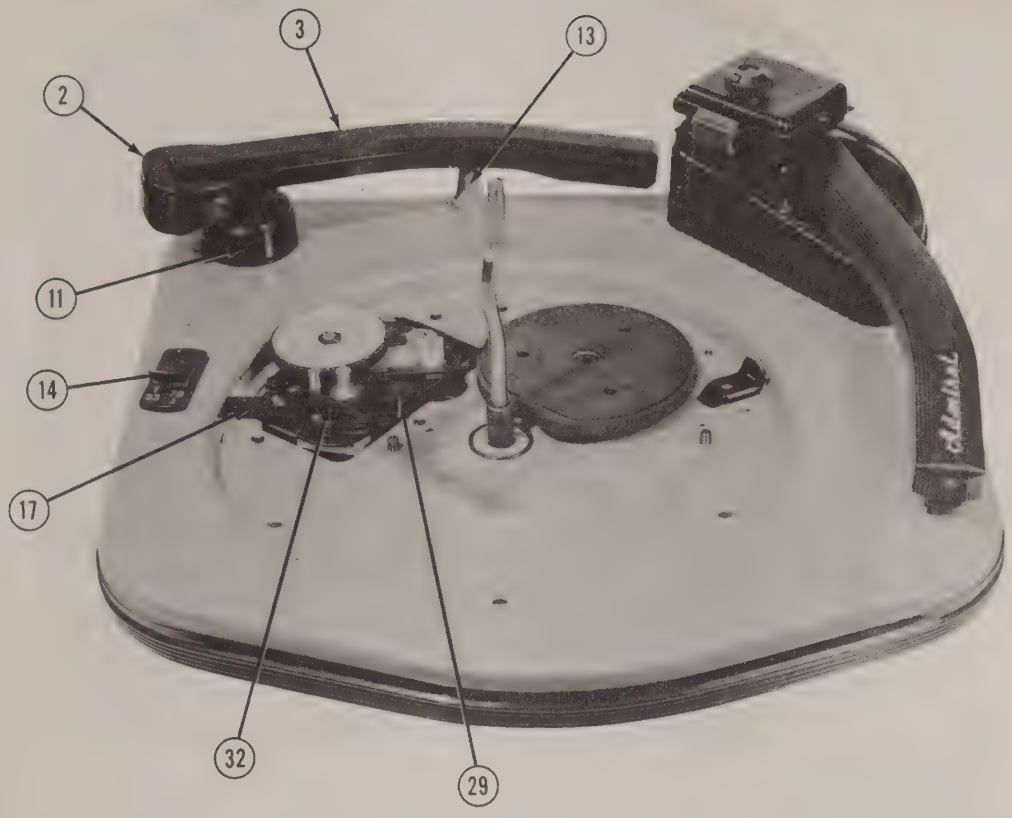
LUBRICATION

Factory lubrication should be sufficient for a long period of service; however, should it become necessary to lubricate the changer, do so as follows:

1. Use SAE No. 20 motor oil on the push-off shaft (7), roller (51), and the oilite bearings used in the turntable hub and base housing.
2. Use a good light grease sparingly on all pivot and friction points.
3. Under normal operating conditions, the motor should never require oiling.
4. When lubricating, be very careful not to allow oil or grease to come in contact with the drive wheel (26) or idler wheel (53) tires and the turntable rim. Carbona or carbon tetrachloride may be used for cleaning these parts. Also be careful, when using oil, that an excessive amount does not seep into the felt of the turntable.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	403A27	Reject on and off knob
2	405A97	Reject spring
3	4B1-166-47	Washer .390 x ⅝ x 1/16
4	G400A258	Head cover
5	G400B137-1	Spindle assembly (includes item 34)
6	G400A253	Record clip
	406A18	Rubber bumper for record clip
7	G400A248	Push-off cam and shaft
8	405A94	Record clip spring
9	G400A249	Record support shelf and shaft
10	401A166	Push-off plate
11	403B29	Pickup arm
11A	401A234	Pickup arm stiffener
12	45-500-C2-47	Set-down adjusting screw, 4-40 x ½ BHMS
13	405A95	Set-down adjusting spring
14	G400A240	Pickup arm pivot and mounting plate
15	402A141	Lift adjusting screw
16	405A81	Lift adjusting lock spring
17	G400A239	Lift plate and rod
18	G400A242	Pivot spring, hub and pin
19	1A43-14	Allen set screw 8-32 x 3/16
20	401A229	Retaining ring
21	405A27	Support spring washer
22	403C28	Base housing
23	402A129	Shakeproof screw No. 2 type 25, thread cutting plastic
24	A1372	Cartridge and needle
	G400A198	Cartridge holder (socket with contacts)
25	G400B167	Turntable
26	G400A252	Drive wheel (includes tire)
	406A13	Drive wheel tire only
27	412A1	Cork washer
28		Thrust bearing washer (part of item 29)
29	415A11	Thrust bearing assembly (including 28 and 29)
30	G400D257	Changer pan (RC181)
	G400D263	Changer pan (RC180)
31	414A23	Drive wheel pressure spring
32	402A115	Base housing mounting screws
33	404A18-1	Drive wheel support (includes rivets)
34	405A62	Speed nut
35	G400A222	Set down and size change assembly
36	405A92	Index spring
37	405A93	Set down spring
38	4B1-68-2	Washer
39	401A177	Retaining ring
40	401A173	Washer
41	401A177	Retaining ring
42	404A17	Size change eccentric
43	G400A233	Arm control lever, studs and pawl
43A		Pawl (part of item 87)
43B		Arm control lever roller (part of item 87)
43C		Arm return roller (part of item 87)
44	405A89	Pawl spring
45	G400A226	Control plate, hub and stud
46	405A90	Safety spring
47	401A173	Washer
48	401A177	Retaining ring
49	401A202	Safety arm
50	G400A224	Pivot link and stud
51	415A9	Powdered iron roller
52	G400A227	Control cam
53	G400A23	Idler wheel assembly (407B3, 407B4 motor)
	G400A57	Idler wheel assembly (for 407B1 motor)
54	412A3-2	Hard fiber washer
55	405A15	Hairpin clip for idler wheel
56	405A14	Idler wheel spring (407B3, 407B4 motor)
	405A67	Idler wheel spring (for 407B1 motor)
57	407B3-2	Motor with idler wheel fasteners 105-125 V., 60 cycles
	407B4-2	Motor with idler wheel and fasteners 105-125 V., 50 cycles
	401A48	Drive pulley (part of item 57. For motors 407B3, 407B4. In addition, motor 407B4 includes a coil spring part No. 405A32)
	405A32	50-cycle conversion spring (used to convert 407B3 motor)
58	G400A196	Rubber mounting grommet and 401A106 fastener (for 407B3-2 and 407B4-2 motor)
	G400A203	Rubber mounting grommet spacer and fastener (for 407B1 motor)
59	401A106	Shakeproof fastener
60	401A229	Retaining ring
61	401A145	Control cam washer
	3B1-26-47	No. 8 I.T. lock washer
62	85-375-C2-39	Control cam screw 8-32 x ⅜ B.H.M.S.
63	G400A219	Push-off arm and link
63A		Push-off arm (part of 63)
64	4B1-68-2	Washer
65	401A177	Retaining ring
66	405A87	Cycle spring
67	405A88	Trip cocking spring
68	1A53-10-47	Switch and trip bracket mounting screw
69	G400A228	Trip bracket and stud
70	401A224	Trip serrations
71	65-500-C2	Trip adjusting screw 6-32 x ½ B.H.M.S.
72	401A222	Reject link
73		Trip stop wire (part of item 74)
74	G400A230	Trip lever complete
75	405A91	Control plate spring
76	401A177	Retaining ring
77	405A22	Spring washer
78	401A230	Retaining ring
79	408A1	On-off switch and cover
80	401A223	Switch bracket
	19A10-3	Mounting springs
	G400A197	Mounting spring screws and washer assembly



TOP VIEW LESS TURNTABLE

GENERAL INFORMATION

The Admiral RC182 Two-Speed Record Changer is a modification of the RC181. In addition to playing the standard 78 RPM records automatically or manually, it is adapted for manually playing the 33⅓ RPM Microgroove records.

The major differences are the addition of a second pickup arm, a two-speed motor, and a speed change switch and knob.

For servicing the standard 78 RPM automatic mechanism, refer to material listed under models RC180 and RC181.

Manufactured by: **ADMIRAL CORPORATION**
3800 Cortland Street • Chicago, Illinois

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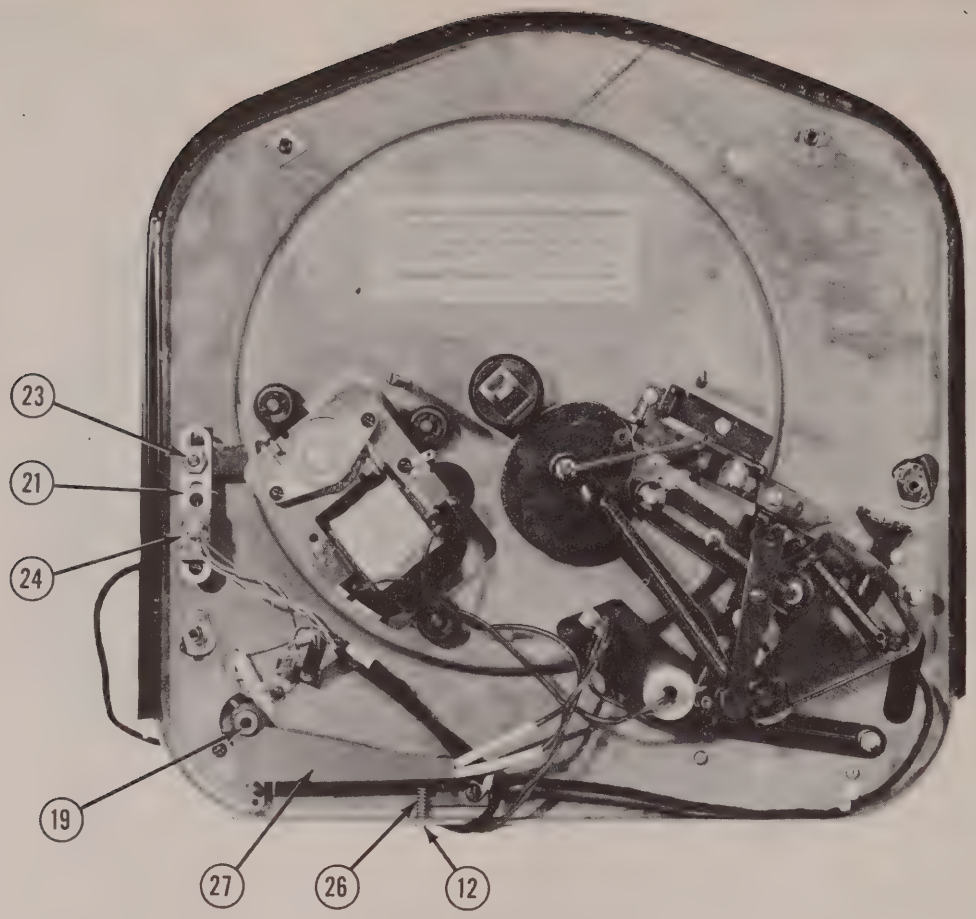
ADMIRAL
MODEL RC182

ADMIRAL
MODEL RC182



BOTTOM VIEW

OPERATING INSTRUCTIONS

The pickup arm, at the rear of the changer, is for manually playing the 33⅓ RPM Microgroove records.

In order to play this type record, merely move the speed change knob (14) to the "33" position, place the record on the turntable, turn the changer on by means of the "On-Off-Reject" knob, and place the pickup arm on the record. The pickup arm should be placed on the record gently so as not to damage the needle or record.

When the needle reaches the end of the record, the changer will automatically shut off. If the pickup arm is lifted from the record and moved toward the arm rest, the motor will turn on again unless the "On-Off-Reject" knob has been turned to the "Off" position.

AUTOMATIC SHUT-OFF ADJUSTMENT

When playing long-play records, the motor should shut off when the needle is approximately 2¼ inches from the near side of the centerpost. If the motor shuts off before or after the arm reaches this point, turn the shut-off adjusting screw (12) in or out until the roller on the arm stop and shaft assembly (19) opens the contacts of the leaf switch (27) when the needle is 2¼ inches from the near side of the centerpost.

If this adjustment is insufficient to obtain proper shutoff, reposition the arm stop and shaft assembly (19) as follows:

1. Loosen Allen set screw (10). With the pickup arm (3) resting on the arm rest (13), move the arm stop and shaft assembly (19) until it touches the rear flange or lip of the changer pan.

2. Tighten the Allen set screw (10). Adjust screw (12) for proper shutoff.

TWO-SPEED MOTOR

The turntable speed is changed mechanically. When the speed change knob (14) is moved to the "33" position, the speed change arm (17) moves. This causes the 33 RPM drive shaft to pivot and ride against the idler wheel. Simultaneously, the 33 RPM pickup arm (3) is switched into the circuit, and the 78 RPM pickup arm out of the circuit, by means of the speed change switch (24).

When the speed change knob is moved to the 78 RPM position, the speed change arm causes the 33 RPM drive shaft to pivot away from the idler wheel.

A PHOTOFACT "EXPLODED" VIEW

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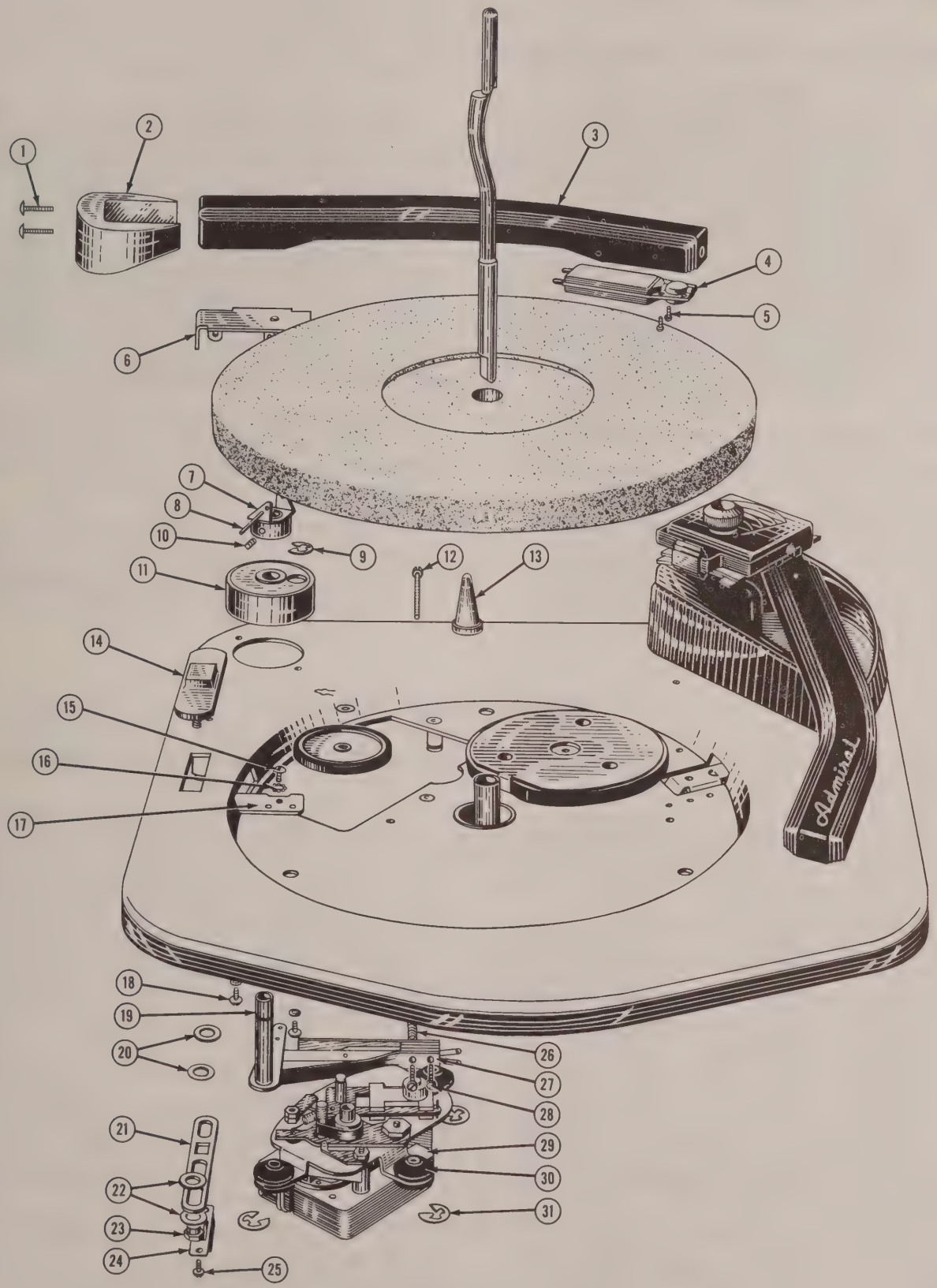


When the speed change knob (14) is moved, make certain that it "clicks" or "snaps" into position. If it is not moved far enough, the speed of rotation will change but the correct pickup arm will not have been switched into the circuit.

RC180 AND RC181 PRODUCTION CHANGERS

A few minor changes were made in the late production of RC180 and RC181 Record Changers. These changes are included in the RC182 Two-Speed Changer.

The most important change is the addition of an adjustable reject link (72) which assures more positive rejecting action. The new and old links are interchangeable.

The record clip (6) and the head cover (4) are now made of plastic. The set-down adjusting screw (12) was ½ inch long; it is now ¾ inch long.

Part numbers for these parts are listed below:

Ref. No.	*Part No.*	*Description*
6	403A 32	Record Clip (Plastic)
4	403A 31	Head Cover (Plastic)
12	45-750-C2-47	Set-Down Adjusting Screw (4-40 x ¾ B.H.M.S.)
72	G400A 266	Adjustable Reject Link

SERVICE HINTS

1. The 33⅓ RPM drive shaft is driven by the 78 RPM drive shaft by means of a rubber drive belt (32). This belt should be clean and free from oil. If the belt is greasy, or stretched, it might possibly slip which would cause the turntable speed to vary resulting in unsatisfactory operation.

2. An extra cork washer has been added under the turntable hub to keep the turntable from rubbing on the idler wheel drive shaft. This cork washer (approximately 3/64" thick) should not be omitted.

3. The rubber mounting grommets (30) are the same as those used for mounting the RC180 and RC181 motor, except that they are put on so the cone portion of the grommet is against the changer pan. The grommets are mounted in the opposite direction in the RC180 and RC181.

4. The largest of the four holes in the switch link (21) is slightly off-center. When replacing or reinstalling this part, be sure the narrow side is toward the nearest edge of the changer pan or base.

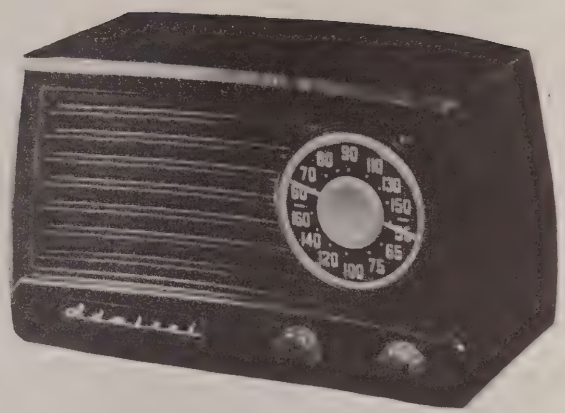
Installing this part with the narrow side toward the center of the changer pan will cause the speed change knob (14) to bind, making it extremely difficult to switch from one speed to another.

PARTS LIST

Ref. No.	*Part No.*	DESCRIPTION
1	40-562-C2-47	Pickup arm counterweight securing screws (4-40 x 9/16 R.H.M.S.)
2	404A 21-1	Pickup arm counterweight
3	403B 29-3	Pickup arm
4	409A 10	Cartridge
5	402A 139	No. 2 type 25 cartridge mounting screws
6	G400A 278	Pickup arm pivot and mounting plate
7	G400A 271	Pivot spring and hub
8	414A 29	Pivot shaft
9	401A 235	Retaining clip
10	1A 43-14	No. 8 Allen set screw
11	G400A 173	Pickup arm base
12	45-1125-C2-47	Shut-off adjusting screw
13	402A 151	Pickup arm rest
14	403A 33	Speed change knob
15		Speed change arm securing screw
16		Lockwasher
17	401A 242	Speed change arm
18		Pickup arm base mounting screw
19	G400A 270	Arm shaft and stop assembly
20	412A 28	Fibre washer
21	401A 241	Switch link
22	412A 23	Fibre washer
23	402A 152	Spacer nut
24	77B 1-1	Speed change switch
25		Switch mounting screw
26	405A 106	Shut-off adjusting screw lock spring
27	408A 2	Automatic shut-off leaf switch
28		Automatic shut-off switch mounting screw
29	407B 15	Two-speed motor
30	406A 4	Rubber motor mounting grommet
31	401A 229	Retaining clip
32	406A 20	Drive belt

ADMIRAL
CHASSIS 5X1

MODEL 5X13



MODEL 5X12

ADMIRAL
CHASSIS 5X1

ADMIRAL MODEL 5X12

TRADE NAME	Admiral, Models 5X11, 5X12, 5X13 (Ch. 5X1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7 IF Amp., 12SQ7GT DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING: .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set pointer parallel with the top of the chassis.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to tuning gang ant. stator. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2.	250MMF	"	1620KC (400~ Mod.)	"	"	A5	" " " "
3.		Loop	1400KC (400~ Mod.)	Tune for max. output	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET-AVC-AF Amp.	12SQ7GT	12SQ7GT	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	67A10	PRSA150/50-30	EDL-5315		TA-530	Filter Red
B	30	150						Filter Yellow
C2	50	500	65B6-4					Osc. Grid Cap.
C3	.1	200	64B1-30	P288-1	GT2P1		TM-1	AVC Filter
C4	250		65B6-5	1468-00025	5W5T25	GP2K-250	1FM-325	RF Filter
C5	.01	400	64B1-25	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C6A	250		Note 1	1468-00025	5W5T25	GP2K-250	1FM-325	AF Plate Bypass
B	10000		Note 1	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C7	.02	400	64B1-24	P488-02	GT4S2		TM-12	Output Plate Bypass
C8	.05	400	64B1-22	P488-05	GT4S5		TM-15	Line Filter
C9	.05	400	64B1-22	P488-05	GT4S5		TM-15	Tuning Cap. Isolation Note 2
C10	.18	200	64A2-2	P488-22	GT4P2		72P53	Line Isolation Note 2.

Note 1. Items C6A, C6B, R5A, and R5B are combined into one unit obtainable under MFGR'S Part. No. 63A5-1.
Note 2. Used only in sets with model numbers having a "UL" suffix.

CONTROLS

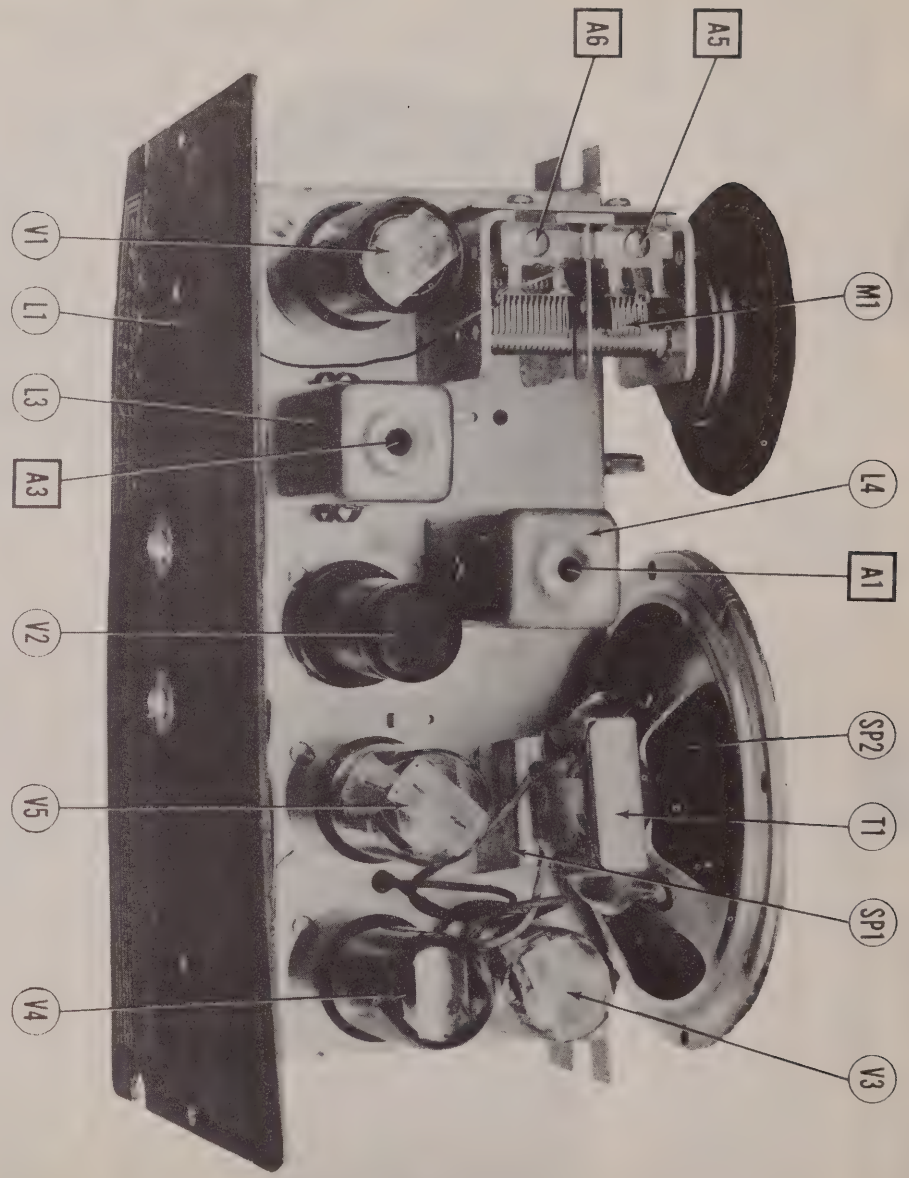
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	75B1-25	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	60B8-223	BTS-22K	Osc. Grid
R3	1 Meg.	½	60B8-105	BTS-1 Meg.	AVC Network
R4	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Grid
R5A	470KΩ	½	Note 1	BTS-470K	AF Plate
B	470KΩ	½	Note 1	BTS-470K	Output Grid
R6	150Ω	½	60B8-151	BW-½-150	Output Cathode
R7	1000Ω	1	60B28-2	BW-1-1000	Filter
R8	33Ω	1	60B28-3		Surge Limiter
R9	150KΩ	½	60B8-154	BTS-150K	Isolation Note 2

Note 1. Items C6A, C6B, R5A, and R5B are combined into one unit obtainable under MFGR'S Part. No. 63A5-1.
Note 2. Used only in sets with model numbers having a "UL" suffix.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2400Ω	3.5Ω	260Ω	.6Ω	98A4	A-3332 ‡	A-3025 ‡	RO-1A ‡	‡ Bend mounting tabs down and mount on original bracket.

SPEAKER

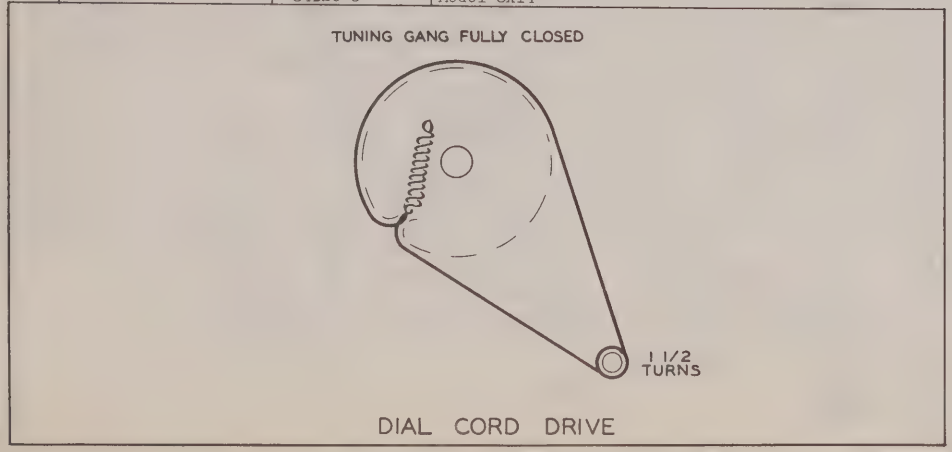
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105†		
SP1	PM	3.5Ω	78B26-1	MOD.P5-X	5A07 †	† Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.
L1	Loop Ant.	.5Ω	1.8Ω	69C108	
L2	Osc. Coil	6Ω		69A20-2	14-1060
L3	Input IF	24Ω	24Ω	72B50	16-6666
L4	Output IF	24Ω	24Ω	72B51	16-6667

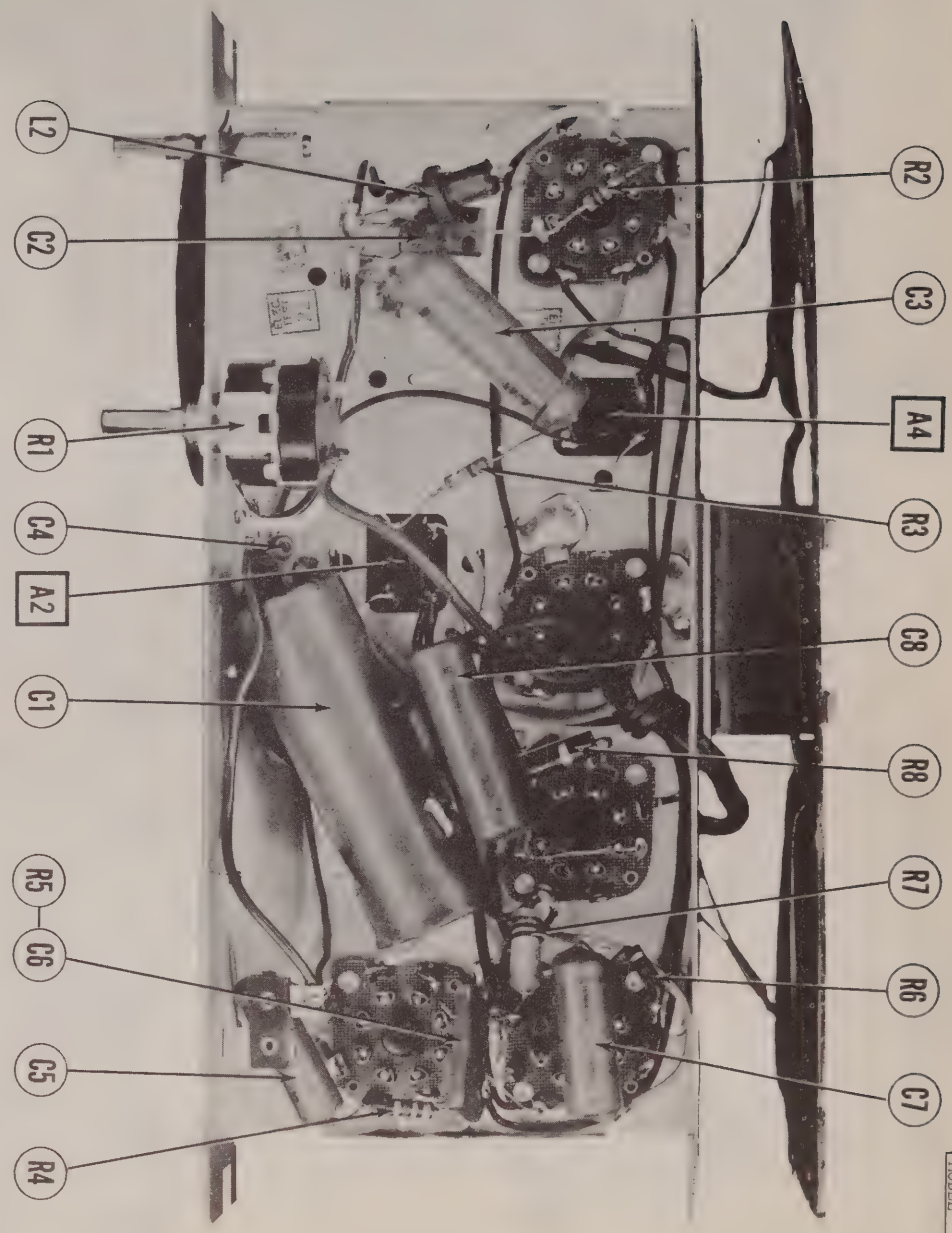
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	2 Gang Var. Cap.	68B28	(30-477MMF, 20-237MMF)
	Dial Pointer	25B34	(Disc.)
	Knob	33A39-7	Model 5X11
	Knob	33A39-9	Model 5X13
	Knob	33A39-8	Models 5X12, 5X14
	Cabinet	34D26-5	Model 5X11
	Cabinet	34D26-6	Model 5X12
	Cabinet	34D26-7	Model 5X13
	Cabinet	34D26-8	Model 5X14

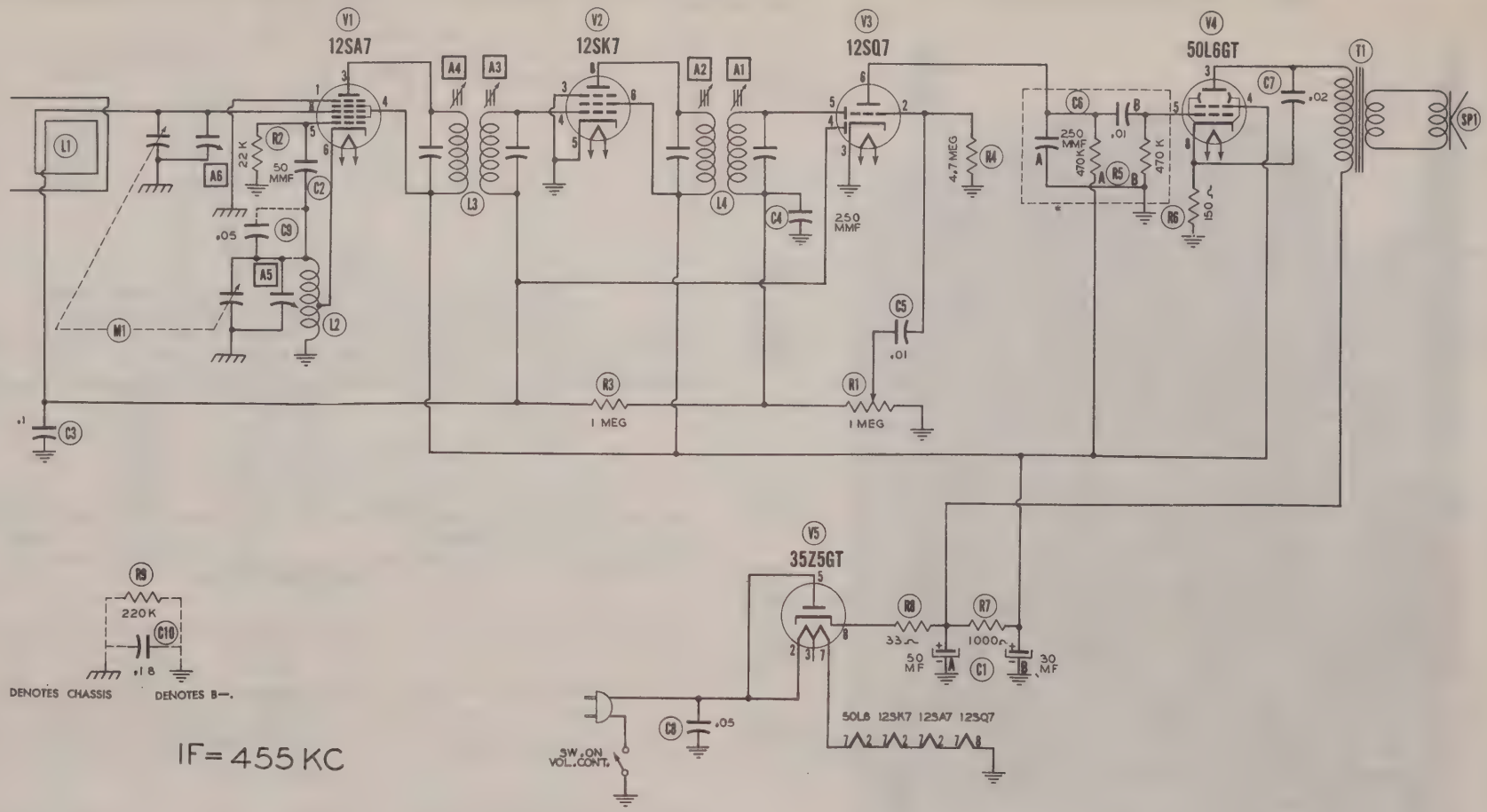


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ADMIRAL MODEL 5X12



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V	12VAC	90VDC	90VDC	§-10VDC	0V	25VAC	-.5VDC
V 2	12SK7	0V	25VAC	0V	-.5VDC	0V	90VDC	38VAC	90VDC
V 3	12SQ7GT	0V	-.7VDC	0V	-.5VDC	-.5VDC	50VDC	0V	12VAC
V 4	50L6GT	0V	38VAC	115VDC	90VDC	0V	122VDC	88VAC	6VDC
V 5	35Z5GT	0V	117VAC	110VAC	90VDC	117VAC	122VDC	88VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0Ω	13Ω	†1000Ω	†1000Ω	22KΩ	.2Ω	26Ω	2 Meg.
V 2	12SK7	0Ω	26Ω	0Ω	2 Meg.	0Ω	†1000Ω	40Ω	†1000Ω
V 3	12SQ7GT	0Ω	4.7 Meg.	0Ω	2 Meg.	1 Meg.	†470KΩ	0Ω	13Ω
V 4	50L6GT	0Ω	40Ω	†210Ω	†1000Ω	470KΩ	133Ω	90Ω	150Ω
V 5	35Z5GT	Inf.	120Ω	115Ω	†1000Ω	120Ω	133Ω	90Ω	90KΩ

† Measured from pin 8 of V5.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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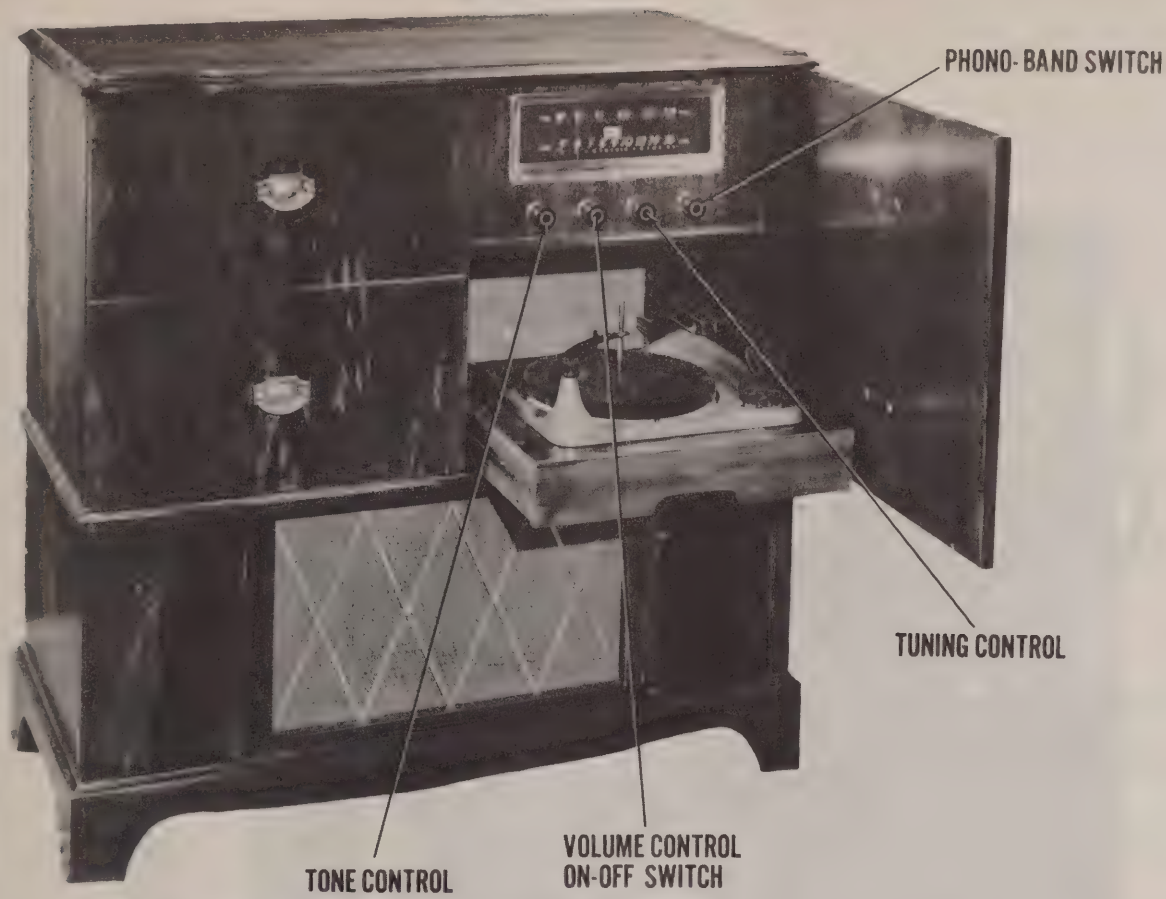
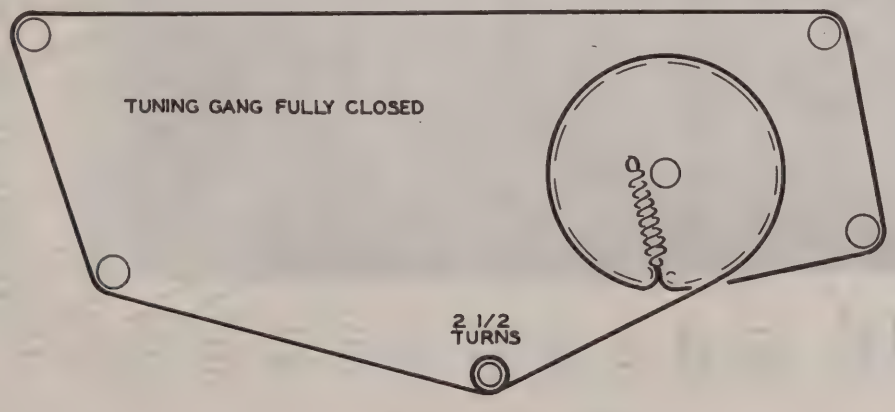
76-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



AIRLINE MODEL 94WG-2745A

TRADE NAME	Airline, Model 94WG-2745A		
SUPPLIER	Montgomery Ward and Co., 619 Chicago Ave., Chicago, Illinois		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES(TEN)	Types 6BA6 RF Amp., 12AT7 Converter, 6BA6 1st IF Amp., 6BA6 2nd FM IF Amp., 6AL5 Ratio Detector, 6AV6 DET-AVC-AF, 6AV6 Phase Inverter, (2) 6K6GT Power Output, 5Y3GT Rectifier.		
POWER SUPPLY	105-125 Volts AC	RATING:	.70 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD.	88-108MC



DIAL CORD DRIVE

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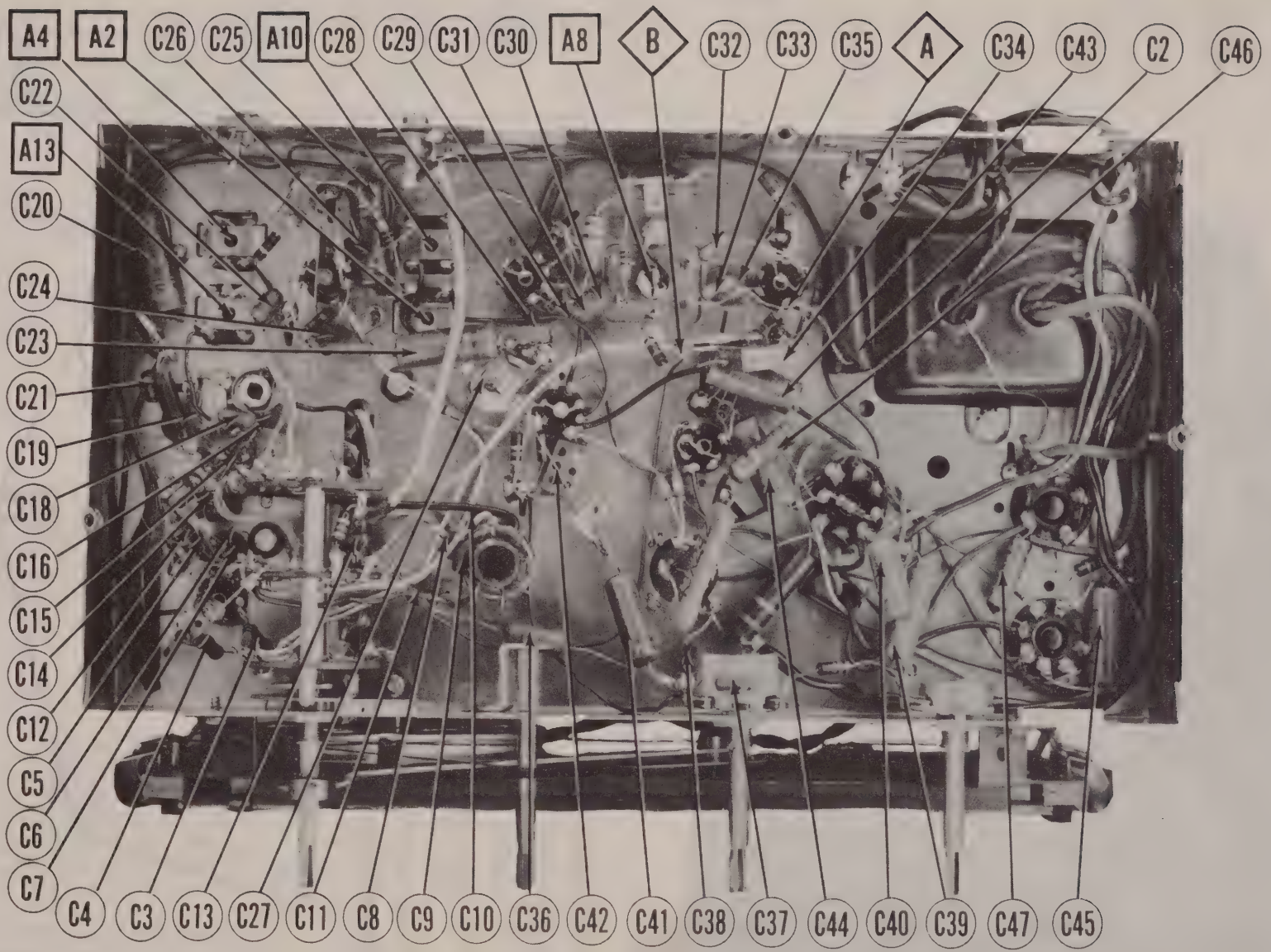
DATE 11/49 SET #76 FOLDER 4


A4
A2
C26
C25
A10
C28
C29
C31
C30
A8
B
C32
C33
C35
A
C34
C43
C2
C46
C22
A13
C20
C24
C23
C21
C19
C18
C16
C15
C14
C12
C5
C6
C7
C4
C3
C13
C27
C11
C8
C9
C10
C36
C42
C41
C38
C37
C44
C40
C39
C47
C45

R34
R23
R24
R26
R25
R31
R32
R22
R21
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R19
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R16
R14
R8
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R12
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R11
L15
R9
R7
R6
R5
R4
L13
L16
R3
M3
R27
R17
L5
R29
R30
R37
R1
R36
R28
R35
R2
R33

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	12AT7	12AT7	9A	
V3	1st IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	DET.-AVC-AF	6AV6	6AV6	7BT	
V7	Phase Inv.	6AV6	6AV6	7BT	
V8	Power Output	6K6GT	6K6GT	7S	
V9	Power Output	6K6GT	6K6GT	7S	
V10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	45X374	AF88J	UP8CJ100		EL-240	◓ Filter
B	40	450		PRS25/50			TA-50	■ Filter
C	40	25						▲ Output Cath. Bypass
C2	5	100	45X361	TRS150/4	BR415		UT-41	Stabilizing Cap.
C3	500		47X496	1468-0005	5W5T5	GP2K-500	1FM-35	RF Coupling
C4	500		47X496	1468-0005	5W5T5	GP2K-500	1FM-35	AVC Filter
C5	5000		47X507	1467-005	1D5D5	811-005	29C1	RF Cath. Bypass
C6	5000		47X507	1467-005	1D5D5	811-005	29C1	RF Screen Bypass
C7	100		47X497	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C8	5		47X549	1468-000005	5W5V5	NP0K-5	MS-55	RF Coupling
C9	100		47X550	1469-0001	5R5T1	N750L-100	MS-31	Fixed Trimmer
C10	15		47X552			GP1K-15	MS-415	Fixed Trimmer
C11	500		47X496	1468-0005	5W5T5	GP2K-500	1FM-35	RF Coupling
C12	5000		47X507	1467-005	1D5D5	811-005	29C1	RF Plate Decoupling
C13	68		47X501	1468-000075	5W5Q7	GP1K-68	1FM-475	RF Coupling
C14	47		47X499	1469-00005	5R5Q5	NP0M-50	MS-45	Fixed Trimmer
C15	5000		47X507	1467-005	1D5D5	811-005	29C1	Mixer Cath. Bypass
C16	20		47X516		5R5Q2	NP0K-20	MS-42	Fixed Trimmer
C17	5		47X549	1469-000005	5R5V5	NP0K-5	MS-55	Fixed Trimmer
C18	47		47X498	1468-00005	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap.
C19	5000		47X507	1467-005	1D5D5	811-005	29C1	Conv. Decoupling
C20	.04	600	F66403	P688-04	GT6S4		TM-14	Conv. Decoupling
C21	500		47X496	1468-0005	5W5T5	GP2K-500	1FM-35	Conv. Fil. Bypass
C22	100		47X550	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C23	.05	200	B66503	P288-05	GT2S5		TM-15	AVC Filter
C24	5000		47X507	1467-005	1D5D5	811-005	29C1	1st IF Screen Bypass
C25	.04	600	F66403	P688-04	GT6S4		TM-14	1st IF Plate Dec.
C26	5000		47X507	1467-005	1D5D5	811-005	29C1	1st IF Plate Dec.
C27A	50		47X112	1468-00005	5W5Q5	GP1K-50	1FM-45	Diode RF Filter
B	50			1468-00005	5W5Q5	GP1K-50	1FM-45	Diode RF Filter
C28	68	500	47X471	1468-000075	5W5Q7	GP1K-68	1FM-475	Diode RF Filter
C29	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Cath. Bypass
C30	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Screen Bypass
C31	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Plate Dec.
C32	68		47X501	1468-000075	5W5Q7	GP1K-68	1FM-475	Diode Load Cap-Note
C33	68		47X501	1468-000075	5W5Q7	GP1K-68	1FM-475	Diode Load Cap-Note
C34	2700	500	47X492	1468-0025	1W5D25	GP2M-0027	1FM-23	De-emphasis
C35	5000		47X507	1467-005	1D5D5	811-005	29C1	AVC Filter
C36	.01	120	46X328	P488-01	GT2S1	GP2-335-01	TM-11	Audio Coupling
C37	68		47X501	1468-000075	5W5Q7	GP1K-68	1FM-475	Tone Compensation
C38	20		47X516	1468-000025	5W5Q2	GP1K-22	MS-42	RF Bypass
C39	.02	200	B66203	P488-02	GT2S2		TM-12	Tone Compensation
C40	.006	600	F66602	P688-006	GT6D6		TM-16	Tone Compensation
C41	.01	600	F66103	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C42	220	500	47X468	1468-00025	5W5T25	GP2K-220	1FM-325	AF Plate Bypass
C43	.02	600	F66203	P688-02	GT6S2		TM-12	Audio Coupling
C44	.005	600	B66502	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C45	.02	600	F66203	P688-02	GT6S2		TM-12	Audio Coupling
C46	.001	600	F66102	P688-001	GT6D1		TM-21	Output Plate Bypass
C47	.001	600	F66102	P688-001	GT6D1		TM-21	Output Plate Bypass
C48	1-8		26A489			532-1-8		Variable Trimmer

Note. When either item C32 or C33 are replaced, replace both with capacitors of equal value.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
SP1	FIELD	V. C. IMP.	12A490	ST-102† MOD.P12-S	12A6A	† Replace output transformer to match 6-8Ω voice coil.
	PM	3.2Ω				
SP2	CONE DIA.	V. C. DIA.				
	11 1/2"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L1	Loop Ant.	0Ω	1Ω	9A2041		
L2	FM Dipole			9A2004		
L3	FM Ant.		0Ω	9A2027		
L4	FM RF		0Ω	9A2024		
L5	AM RF	30Ω	5Ω	9A2025		
L6	FM Osc.		0Ω	9A2023		
L7	AM Osc.		5Ω	9A2022	14-1060	
L8	FM 1st IF	.1Ω	.1Ω	9A2034		
L9	AM 1st IF	20Ω	20Ω	9A2029		Tertiary winding 10Ω
L10	FM 2nd IF	2Ω	.3Ω	9A2030		
L11	AM 2nd IF	12.5Ω	12.5Ω	9A2042	16-6678	
L12	Disc. Trans.	2.5Ω	.1Ω	9A1970		
L13	RF Choke		1.6Ω	35A5		
L14	RF Choke		1.6Ω	35A5		
L15	RF Choke		.6Ω	9A1881		
L16	RF Choke		.2Ω	35A7		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRLINE PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	7A103		Type #47
M2	Bayonet	6-8	.15	Brown	7A103		Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
M3		LQD-1	Remove knob bracket from original.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Switch	2A391	Band
M5	3 Gang. Var. Cap.	14A207	(23-473MMF, 23-473MMF, 32-215MMF)
	Dial Glass	58X723	
	Dial Pointer	15X246	
	Knob	10A713	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	36X383	Q13-133X	AT-78	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions
R2A	3 Meg.	½	40X285	Q13-140	AM-67-Z	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
R3	1 Meg.	½	B85105	BTS-1 Meg.	RF Grid
R4	68Ω 5%	½	B83680	BW-½-68-5%	RF Cathode
R5	56KΩ	½	B84563	BTS-56K	RF Screen
R6	1000Ω	½	B84102	BTS-1000	RF Plate Decoupling
R7	100KΩ	½	B85104	BTS-100K	Conv. Grid
R8	1000Ω	½	B84102	BTS-1000	Conv. Decoupling
R9	1000Ω	½	B84102	BTS-1000	Conv. Cathode
R10	6800Ω	½	B84682	BTS-6800	FM RF Coil Shunt
R11	10KΩ	½	B84103	BTS-10K	Osc. Grid
R12	2.2 Meg.	½	B85225	BTS-2.2 Meg.	1st IF Grid
R13	68Ω 5%	½	B83680	BW-½-68-5%	1st IF Cathode
R14	56KΩ	½	B84563	BTS-56K	1st IF Screen
R15	1000Ω	½	B84102	BTS-1000	1st IF Plate Decoupling
R16	1 Meg.	½	B85105	BTS-1 Meg.	AVC Network
R17	470KΩ	½	B85474	BTS-470K	Diode Load
R18	47KΩ	½	B85473	BTS-47K	Diode Filter
R19	68Ω 5%	½	B83680	BW-½-68-5%	2nd FM IF Cathode
R20	39KΩ	1	C84393	BTA-39K	2nd FM IF Screen
R21	2200Ω	½	B85222	BTS-2200	2nd FM IF Plate Decoupling
R22	27KΩ	½	B84273	BTS-27K	De-emphasis
R23	68000Ω 5%	½	B83682	BTS-6800-5%	Ratio Det. Diode Load
R24	68000Ω 5%	½	B83682	BTS-6800-5%	Ratio Det. Diode Load
R25	3.6Ω	½	43X233	BW-½-3.9	Ratio Det. Filament (Wire Wound)
R26	1 Meg.	½	B85105	BTS-1 Meg.	AVC Network
R27	470KΩ	½	B85474	BTS-470K	Tone Compensation
R28	15KΩ	½	B85153	BTS-15K	Tone Compensation
R29	10 Meg.	½	B85106	BTS-10 Meg.	AF Grid
R30	270KΩ	½	B85274	BTS-270K	AF Plate
R31	10 Meg.	½	B85106	BTS-10 Meg.	Phase Inv. Grid
R32	270KΩ	½	B85274	BTS-270K	Phase Inv. Plate
R33	470KΩ	½	B85474	BTS-470K	Output Grid
R34	8200Ω	½	B84822	BTS-8200	Output Grid
R35	470KΩ	½	B85474	BTS-470K	Output Grid
R36	560Ω 5%	2	D83561	BT-2-560-5%	Output Cathode
R37	1400Ω	5	43X242	AB-1450	Filter (Wire Wound)

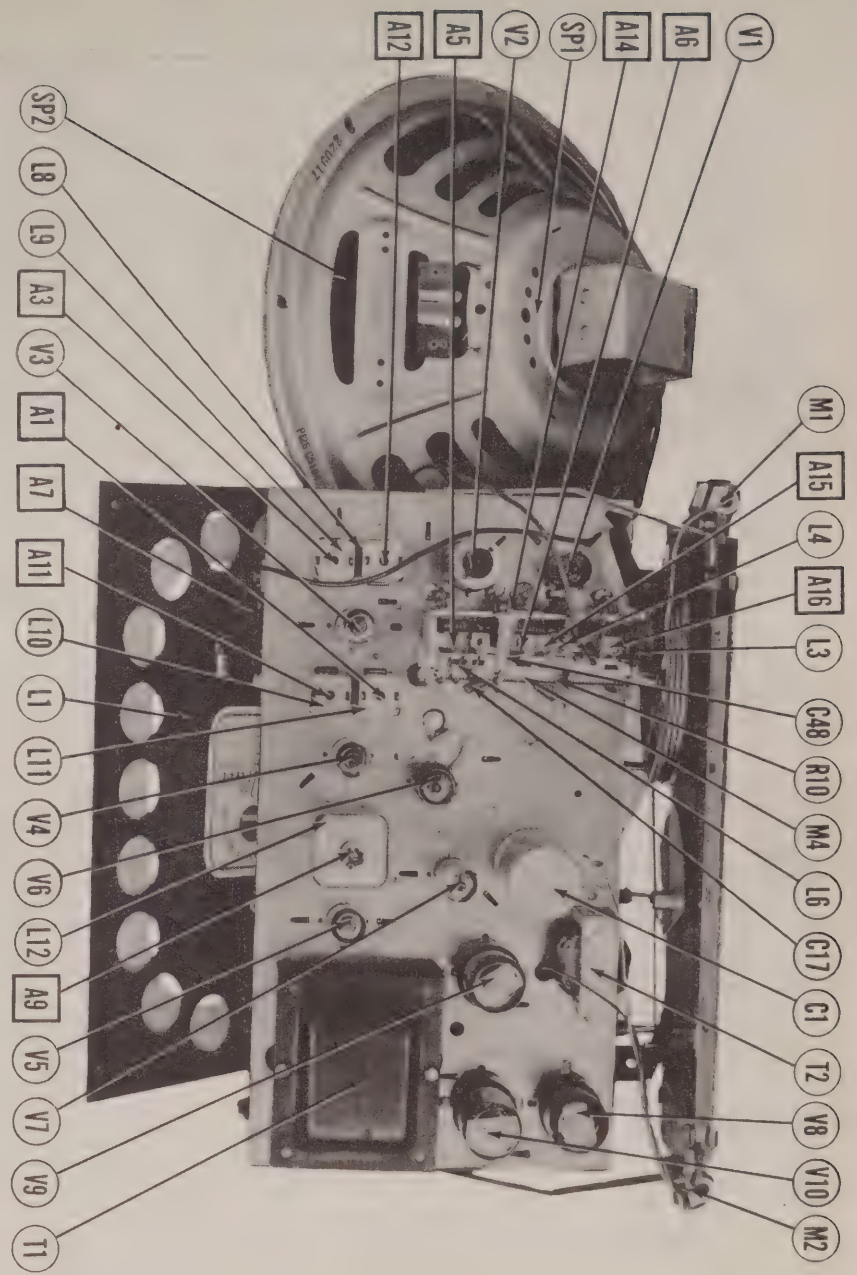
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .7A	660VCT .93ADC	5VAC @ 2A	6.3VAC @ 3.2A	53X286	P-6013 ‡	P-2953 ‡	PH-90 ‡

‡ Drill new mounting holes and add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	10KΩ CT	3.2Ω	480Ω CT	.5Ω	51X142	A-3823	A-2936	RO-110	



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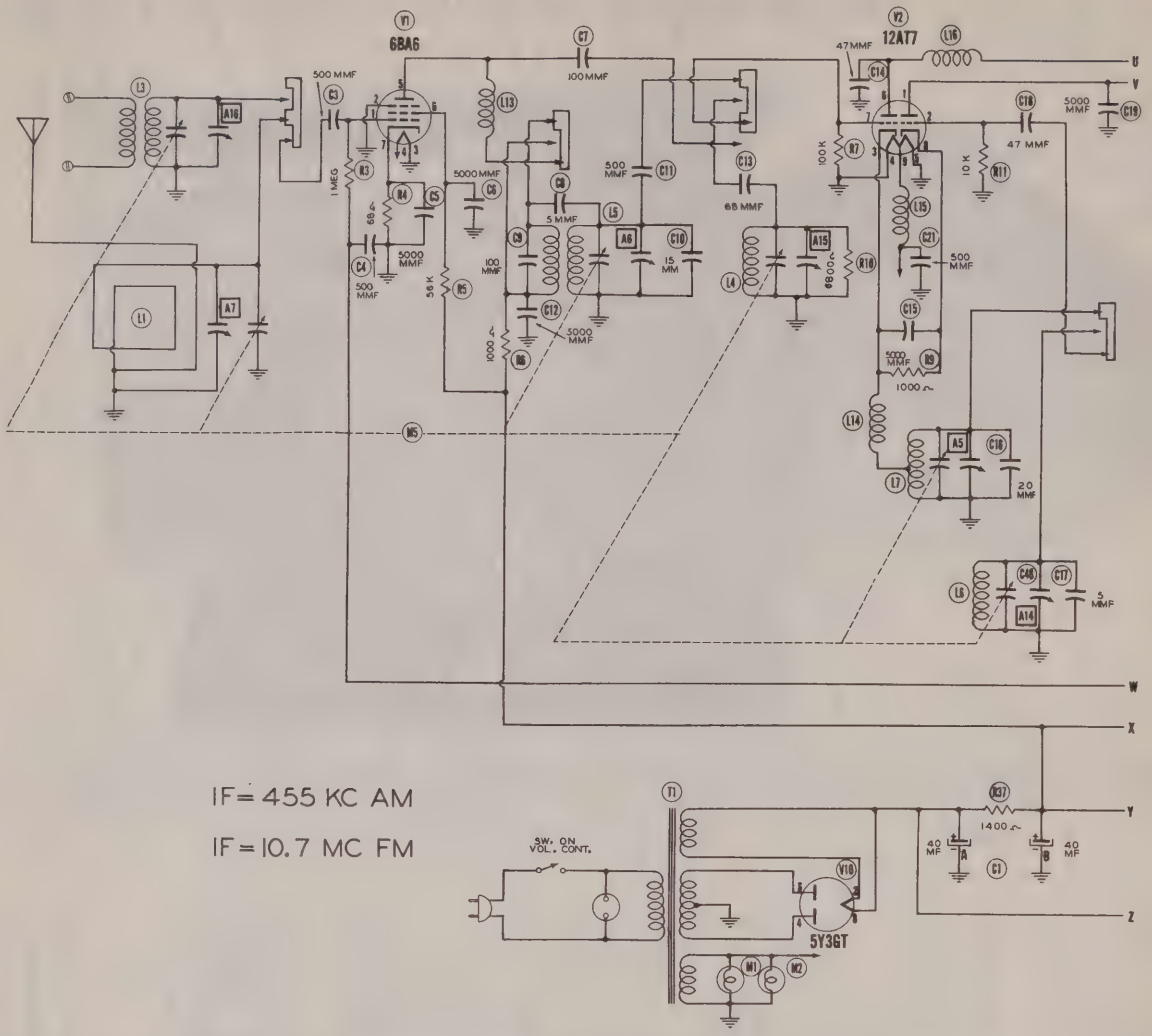

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BA6	0V	0V	0V	6.5VAC	240VDC	75VDC	.75VDC		
V2A	12AT7	230VDC	§-6.5VDC	.1VDC	0V	0V	230VDC	0V	4.5VDC	6.3VAC
V2B	12AT7	230VDC	§-.2VDC	.1V.C	0V	0V	230VDC	0V	3.9VDC	6.3VAC
V3	6BA6	0V	0V	0V	6.5VAC	245VDC	68VDC	.8VDC		
‡ V4	6BA6	0V	0V	0V	6.5VAC	230VDC	87VDC	1VDC		
‡ V5	6AL5	0V	0V	0V	6.5VAC	.25VDC	0V	-.25VDC		
V6	6AV6	-.75VDC	0V	0V	6.5VAC	0V	-1.5VDC	112VDC		
V7	6AV6	-.6VDC	0V	0V	6.5VAC	0V	0V	105VDC		
V8	6K6GT	105VDC	6.5VAC	320VDC	230VDC	0V	0V	0V	18VDC	
V9	6K6GT	0V	6.5VAC	320VDC	230VDC	0V	0V	0V	18VDC	
V10	5Y3GT	0V	320VDC	0V	310VAC	0V	310VAC	0V	320VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BA6	2.5 Meg.	0Ω	0Ω	.1Ω	†250Ω	†60KΩ	70Ω		
V2A	12AT7	†250Ω	10KΩ	4Ω	0Ω	0Ω	†250Ω	100KΩ	1KΩ	.7Ω
V2B	12AT7	†250Ω	10KΩ	4Ω	0Ω	0Ω	†250Ω	100KΩ	1KΩ	.7Ω
V3	6BA6	3.7 Meg.	0Ω	0Ω	.1Ω	†250Ω	†60KΩ	70Ω		
‡ V4	6BA6	.3Ω	0Ω	0Ω	.1Ω	†350Ω	†40KΩ	70Ω		
‡ V5	6AL5	Inf.	Inf.	0Ω	2.3Ω	7KΩ	0Ω	7KΩ		
V6	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	500KΩ	†270KΩ		
V7	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†270KΩ		
V8	6K6GT	†270KΩ	.1Ω	†40Ω	†1500Ω	470KΩ	Inf.	0Ω	560Ω	
V9	6K6GT	820Ω	.1Ω	†40Ω	†1500Ω	470KΩ	.5Ω	0Ω	560Ω	
V10	5Y3GT	Inf.	80KΩ	Inf.	130Ω	Inf.	140Ω	Inf.	80KΩ	

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
† Measured from pin 8 of V10.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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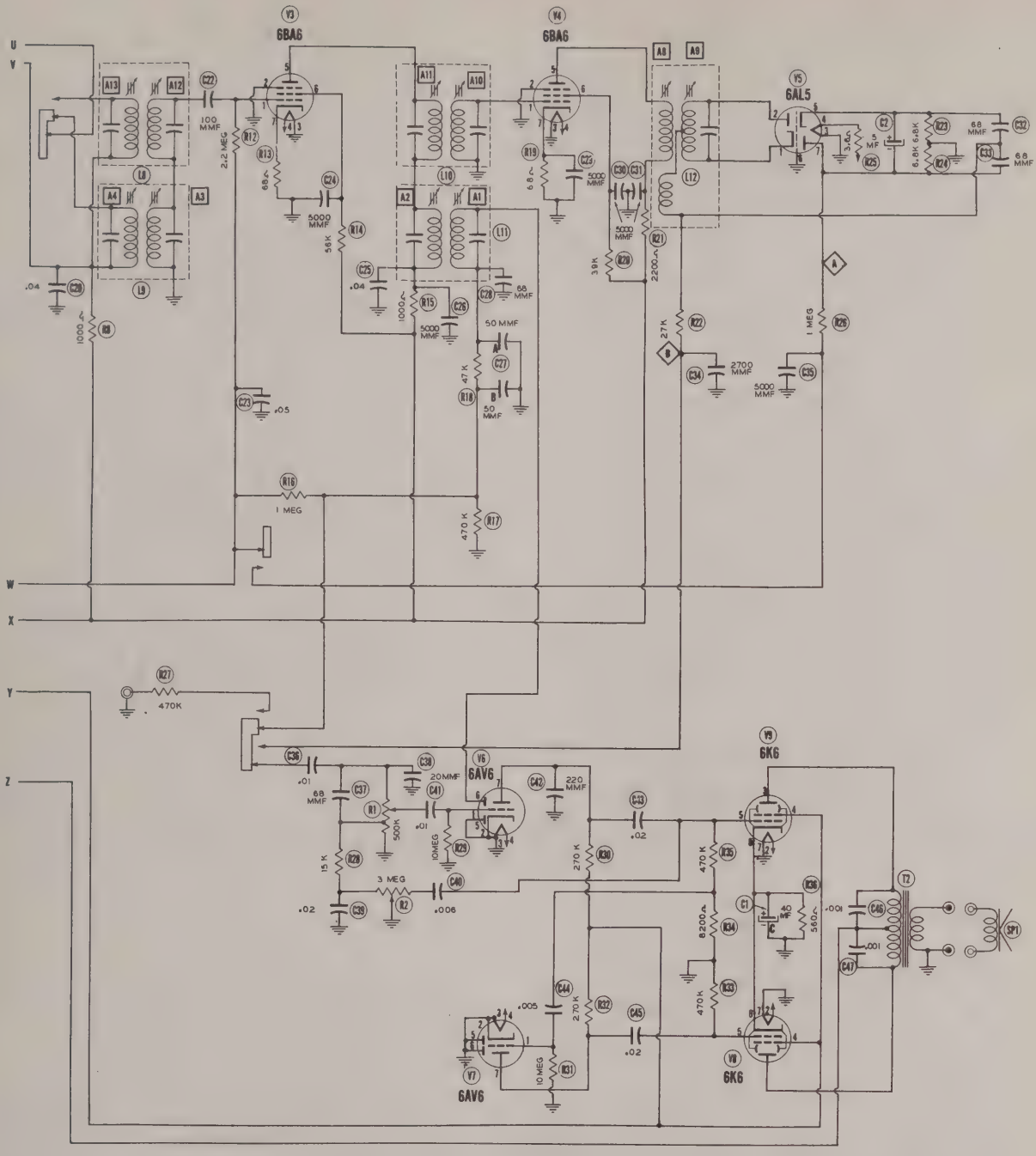

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V2). Low side to chassis.	455KC (400∿ Mod.)	AM (center)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2.	200MMF	High side to external antenna terminal. Low side to chassis.	1620KC	"	"	"	A5	"
3.	200MMF	"	1400KC	"	Tune for max. output	"	A6	Adjust for maximum output. If pointer is not at 1400 on dial, move pointer to 1400.
4.		Loop	"	"	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V4). Low side to chassis.	10.7MC (Unmod.)	FM (max. clockwise)	Tuning gang fully open	DC Probe to Point (A) Common to chassis.	A8	Adjust for maximum deflection.
6.	.01MFD	"	"	"	"	DC Probe to Point (B) Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis.	"	"	"	DC Probe to Point (A) Common to chassis.	A10, A11	Adjust for maximum deflection.
8.	.01MFD	High side to stator of FM interstage section of tuning gang. Low side to chassis.	"	"	"	"	A12, A13	Adjust for maximum deflection. Repeat steps 5 and 6 with signal generator connected as in step 8.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis.	10.7MC (450KC Sweep)	FM (ext. clockwise)	Point of non interference	Vert.Amp. to Point (A) Low side to chassis.	A8, A10, A11	Disconnect stabilizer cap C2. Adjust for maximum amplitude and symmetry as per Fig 1.
6.	.01MFD	High side to stator of FM inter stage section of tuning gang. Low side to chassis.	"	"	"	"	A12, A13	"
7.	.01MFD	"	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A8,A9	Reconnect stabilizer cap C2. Adjust A9 so 10.7MC occurs at center of crossover lines. Slightly retouch A8 for maximum amplitude and straightness of crossover lines as per Fig 2. Continue with step 9.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	300Ω carbon res.	Across antenna terminals with 300Ω in high side.	108.4MC (Unmod.)	FM	Tuning gang fully open	DC Probe to Point (A) Common to chassis.	A14	Adjust for maximum deflection.
10.	"	"	104.5MC	"	Tune for max. output.	"	A15, A16	"

FIG. 1

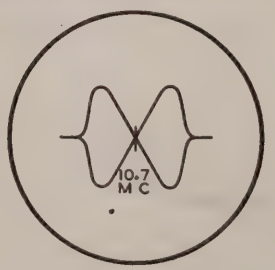

FIG. 2

PHOTOFACT* Folder

ANDREA MODELS
BT-VK12, COVK-125, CVK-126, T-VK12, TVK-127B, M

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MODEL T-VK12

ANDREA MODELS
BT-VK12, COVK-125,
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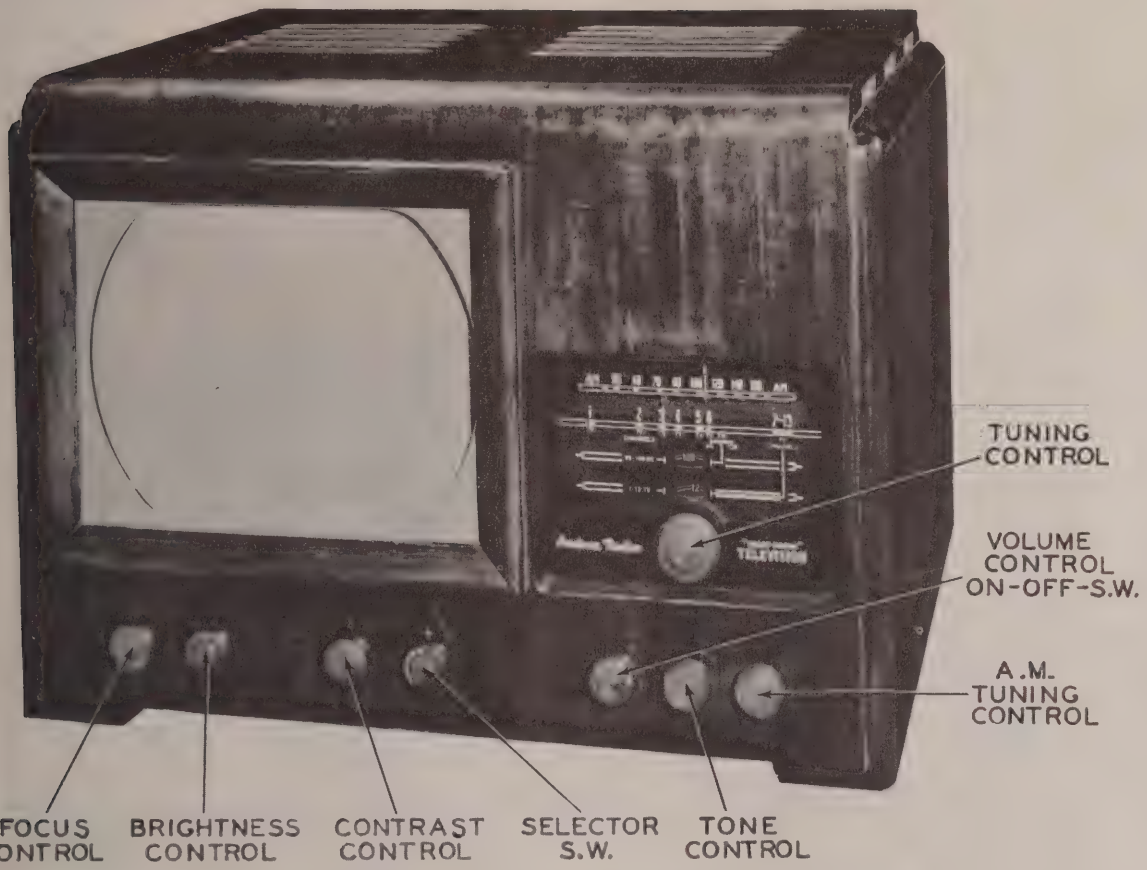

ANDREA
MODELS BT-VK12, CVK-126, COVK-125, T-VK12, TVK-127B,M

TRADE NAME	Andrea Models BT-VK12 (Sharron), COVK-125 (Ridgeway), CVK-126 (Gramercy), T-VK12 & TVK-127M (Sharron).
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City, New York
TYPE SET	AM-FM-TV Receiver
TUBES	Twenty Nine
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	AM 540-1620KC FM-TV 44 thru 216MC (Continuous Tuning) RATING: 2.4 Amp. @ 117 Volts AC

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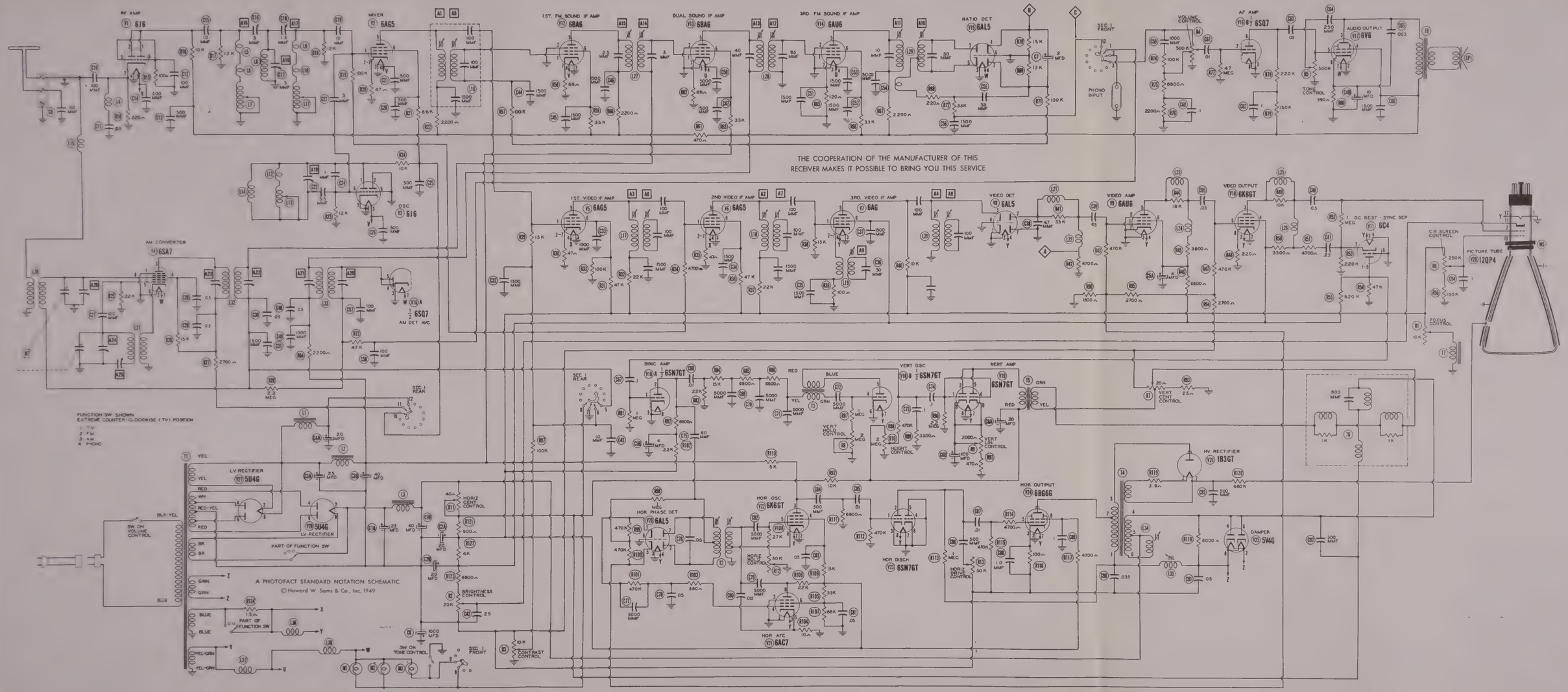
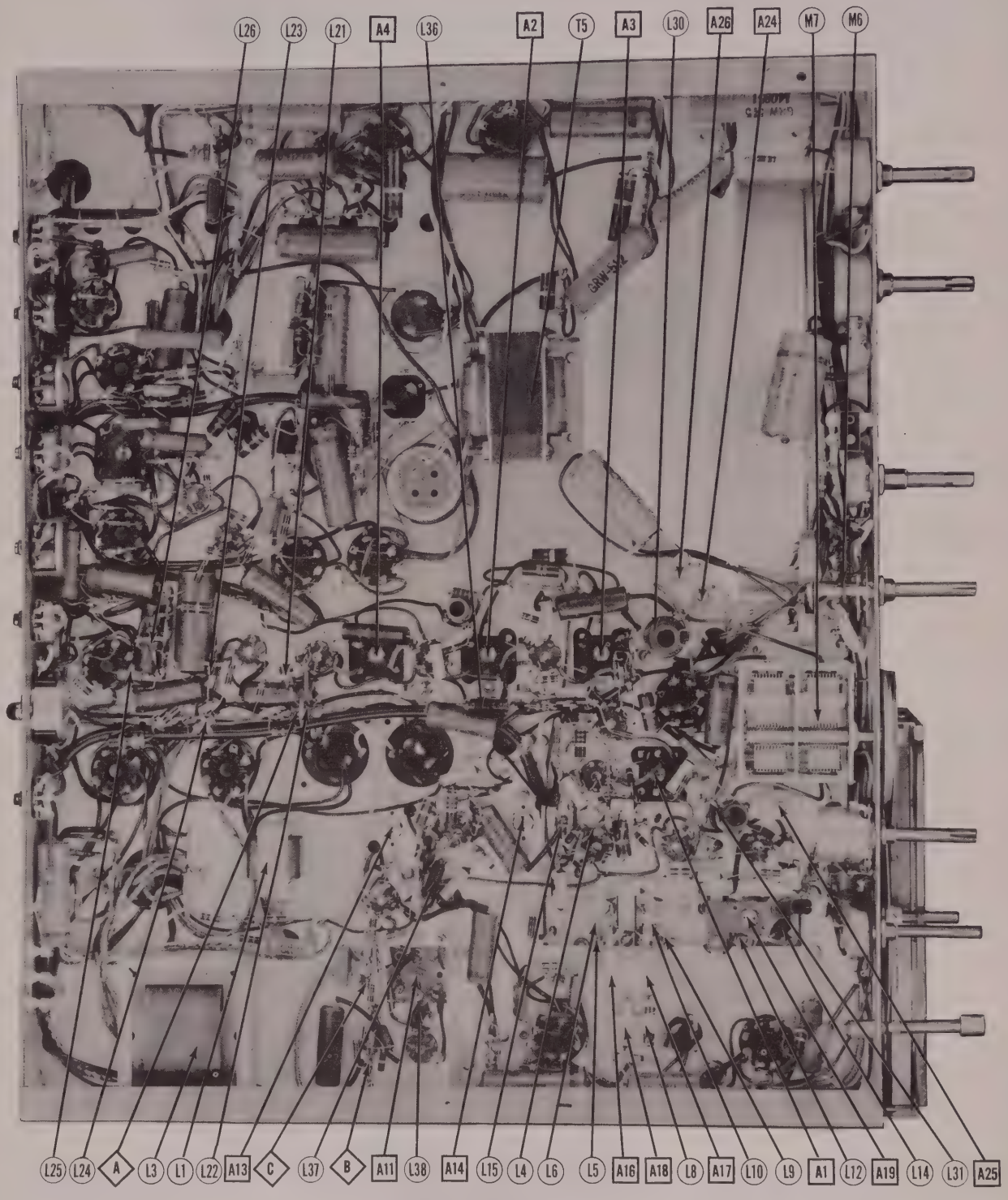
DATE 11/49 SET #76 FOLDER #5



ANDREA MODELS BT-VK12,
CVK-126, COVK-125, T-VK12, TVK-127B,M

CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

ANDREA MODELS BT-VK12, CVK-126, COVK-125, T-VK12, TVK-127B,M

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

It is recommended that the picture tube be removed before alignment.
To remove high voltage shock hazard, remove the wave shaper tube V23.

VIDEO IF ALIGNMENT

a) Remove the local oscillator tube, V3, to prevent erroneous indications.
b) Turn the selector switch to "Television". This is the extreme counter-counterwise position.
c) Set the contrast control to read -4.5 volts between the junction of R97 and C43, and chassis.
d) The video IF circuits are aligned by adjusting the overall response simultaneously. The low frequency skirt is effected principally by A1 and the high frequency skirt by A2. The flatness of the center region is effected by A3 and A4.
e) When adjusting the traps A5, A6, A7 A8 and A9, the marker generator output should be set at maximum, and the traps adjusted for minimum indication at the points shown on the response curve (Figure 1).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	24.5MC (10MC Sweep)	22.95MC 26.2MC	Any	Vert. Amp. to Point (A) Low side to chassis.	A1,A2, A3,A4	Adjust for proper response as per Fig 1 with markers as shown. See note "d" above.
2.	Direct	"	"	21.7MC	"	"	A5,A6	Adjust for MINIMUM response at the 21.7MC point shown on response curve (Fig 1). See note "e" above.
3.	Direct	"	"	27.7MC	"	"	A7,A8	Adjust for minimum response at the 27.7MC point shown in Fig 1. See note "e" above.
4.	Direct	"	"	21.7MC	"	"	A9	Adjust for maximum amplitude of peak just below 21.7MC point on response curve. If necessary retouch A1 thru A9 for optimum response as per Fig 1.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60\ modulation and 450KC sweep. Use 120\ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V14). Low side to chassis.	21.7MC (450KC Sweep)	21.7MC	Any	Vert. Amp. to Point (B) Low side to chassis.	A10,A11	Disconnect stabilizer capacitor C7. Detune A10 clockwise. Adjust A11 for maximum amplitude and symmetry as per Fig 2.
6.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V13). Low side to chassis.	"	"	"	"	A12,A13	Adjust for maximum amplitude and symmetry as per Fig 2.
7.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V12). Low side to chassis.	"	"	"	"	A14,A15	"
8.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A10,A11	Reconnect capacitor C7. Adjust A10 so 21.7MC marker occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

RF AND MIXER ALIGNMENT

The RF and mixer lines of this receiver are pre-set at the factory and are normally very stable. Alignment should not be attempted unless they are definitely known to be out of alignment.

A sweep generator with a maximum output of at least .5 volt is necessary to properly align the RF and mixer portion of the receiver.

Remove the local oscillator tube V3.

Unsolder the blue lead from pin 5 of the mixer tube V2. Connect pins 5 and 6 of V2 together with a short piece of wire. Connect the vertical amplifier of the oscilloscope to pin 6 of the mixer tube. Connect the low side to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to the left hand "A" terminal on antenna terminal strip. Low side to chassis.	57MC (10MC Sweep)	55.25MC 59.75MC	2	See note above	A16,A17, A18	Adjust for response similar to Fig 4 with markers as shown.
10.	Direct	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"	L5,L9	SLIGHTLY expand or compress L5 & L9 for response similar to Fig 6. Repeat steps 9 and 10.
11.	Direct	"	63MC (10MC Sweep)	61.25MC 65.75MC	3	"		Check for response similar to Fig 4.
			69MC (10MC Sweep)	67.25MC 71.75MC	4			
			79MC (10MC Sweep)	77.25MC 81.75MC	5			
			85MC (10MC Sweep)	83.25MC 87.75MC	6			
12.	Direct	"	177MC (10MC Sweep)	175.25MC 179.75MC	7	"		Check for response similar to Figs. 5 and 6.
			183MC (10MC Sweep)	181.25MC 185.75MC	8			
			189MC (10MC Sweep)	187.25MC 191.75MC	9			
			195MC (10MC Sweep)	193.25MC 197.75MC	10			
			201MC (10MC Sweep)	199.25MC 203.75MC	11			
			207MC (10MC Sweep)	205.25MC 209.75MC	12			

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Replace the local oscillator tube V3.
Remove the connection between pins 5 and 6 of V2.
Reconnect the blue lead to pin 5 of mixer tube.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Direct	High side to left hand "A" terminal on antenna terminal strip. Low side to chassis.	59.75MC (Unmod.)	2	DC Probe to Point C. Common to chassis.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
14.	Direct	"	215.75MC (Unmod.)	13	"	L12	SLIGHTLY expand or compress coil turns for zero reading as in step 13. Repeat steps 13 and 14.
15.	Direct	"	209.75MC	12	"		Check all other channels to see that zero reading occurs at the proper dial setting as the sound carrier frequency for each channel is fed into the receiver. If necessary, repeat steps 13 and 14 for optimum results on all channels.
			203.75MC	11			
			197.75MC	10			
			191.75MC	9			
			185.75MC	8			
			179.75MC	7			
			87.75MC	6			
			81.75MC	5			
			71.75MC	4			
			69.75MC	3			

RADIO ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
16	.01MFD	High side to stator of front section of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	AM (Third pos. clockwise)	Tuning gang fully closed	Across voice coil	A20, A21, A22, A23	Adjust for maximum output.
17	.01MFD	"	1600KC (400∿ Mod.)	"	1600KC	"	A24	"
18	.01MFD	"	600KC (400∿ Mod.)	"	600KC	"	A25	Adjust for maximum output. Repeat steps 17 and 18 until no further improvement can be made.
19	200MMFD	High side to left hand "A" terminal on antenna terminal strip. Low side to chassis.	1600KC (400∿ Mod.)	"	1600KC	"	A26	Adjust for maximum output.

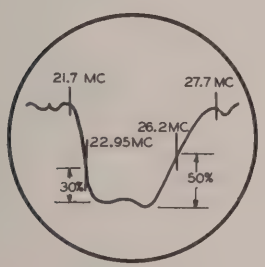


FIG. 1

FIG. 2

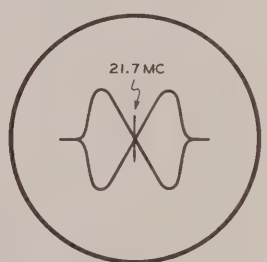


FIG. 3

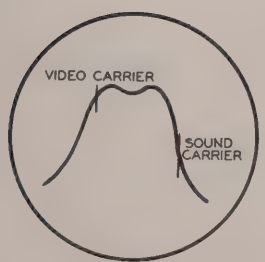


FIG. 4

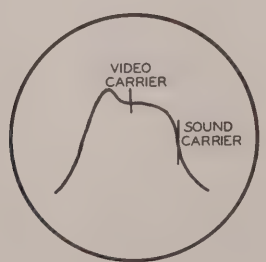


FIG. 5

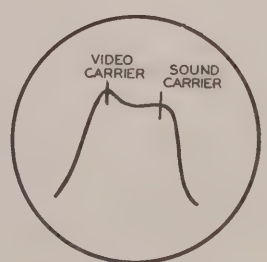


FIG. 6

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	130VDC	130VDC	6.3VAC	0V	0V	0V	2.6VDC		
V 2	6AG5	-2.3VDC	.2VDC	0V	6.3VAC	235VDC	145VDC	.2VDC		
V 3	6J6	145VDC	0V	6.3VAC	0V	0V	§-7.4VDC	0V		
▲ V 4	6SA7	0V	0V	250VDC	115VDC	§-.4VDC	0V	6.3VAC	.1VDC	
V 5	6AG5	-1.2VDC	.2VDC	0V	6.3VAC	182VDC	145VDC	.2VDC		
V 6	6AG5	-1.2VDC	.5VDC	0V	6.3VAC	75VDC	180VDC	.5VDC		
V 7	6AG5	0V	1.2VDC	0V	6.3VAC	200VDC	150VDC	1.2VDC		
V 8	6AL5	0V	-.2VDC	0V	6.3VAC	0V	0V	0V		
V 9	6AU6	-.4VDC	0V	0V	6.3VAC	147VDC	130VDC	0V		
V 10	6K6GT	0V	6.3VAC	90VDC	150VDC	-1.8VDC	-6.9VDC	0V		
V 11	6C4	7VDC	150VDC	6.3VAC	0V	7VDC	0V	1.5VDC		
V 12	6BA6	-6.9VDC	0V	0V	6.3VAC	215VDC	100VDC	1VDC		
V 13	6BA6	0V	0V	0V	6.3VAC	225VDC	110VDC	1VDC		
V 14	6AU6	0V	0V	0V	6.3VAC	235VDC	155VDC	1.3VDC		
V 15	6AL5	.1VDC	-.1VDC	0V	6.3VAC	0V	0V	.1VDC		
▲ V 16	6SQ7	0V	-.2VDC	0V	-.4VDC	-.4VDC	90VDC	6.3VAC	0V	
V 17	6V6GT	0V	0V	240VDC	250VDC	0V	0V	6.3VAC	13VDC	
V 18	6SN7GT	-.4VDC	87VDC	0V	-3.6VDC -3.8VDC	-.1VDC 190VDC	0V	6.3VAC	0V	
V 19	6SN7GT	0V	225VDC	7.8VDC 17VDC	0V	225VDC	7.8VDC 17VDC	6.3VAC	0V	
V 20	6AL5	-.5VDC	-4.3VDC	0V	6.3VAC	-2.3VDC	0V	-6.7VDC		
V 21	6AC7	0V	0V	0V	-.7VDC	0V	82VDC	6.3VAC	240VDC	
V 22	6K6GT	0V	0V	175VDC	185VDC	-22VDC -28VDC	0V -18.5VDC	6.3VAC	.2VDC	
V 23	6SN7GT	-38.5VDC	22VDC	0V	0V	0V	0V	0V	6.3VAC	
V 24	6BG6G	0V	0V	◓9VDC	▲6.6VDC	◓-2VDC	◓-2.2VDC	6.3VAC	◓250VDC	TOP CAP *
V 25	5V4G	0V	470VDC	0V	400VDC	0V	400VDC	0V	470VDC	
V 26	1B3GT	* DO NOT MEASURE								
V 27	5U4G	0V	280VDC	0V	200VAC	0V	200VAC	0V	280VDC	
V 28	5U4G	420VDC	420VDC	0V	350VAC	0V	350VAC	0V	420VDC	
V 29	12QP4	0V	.3VDC	PIN 10 100VDC	PIN 11 290VDC	PIN 12 110VDC	PIN 12 6.3VAC			

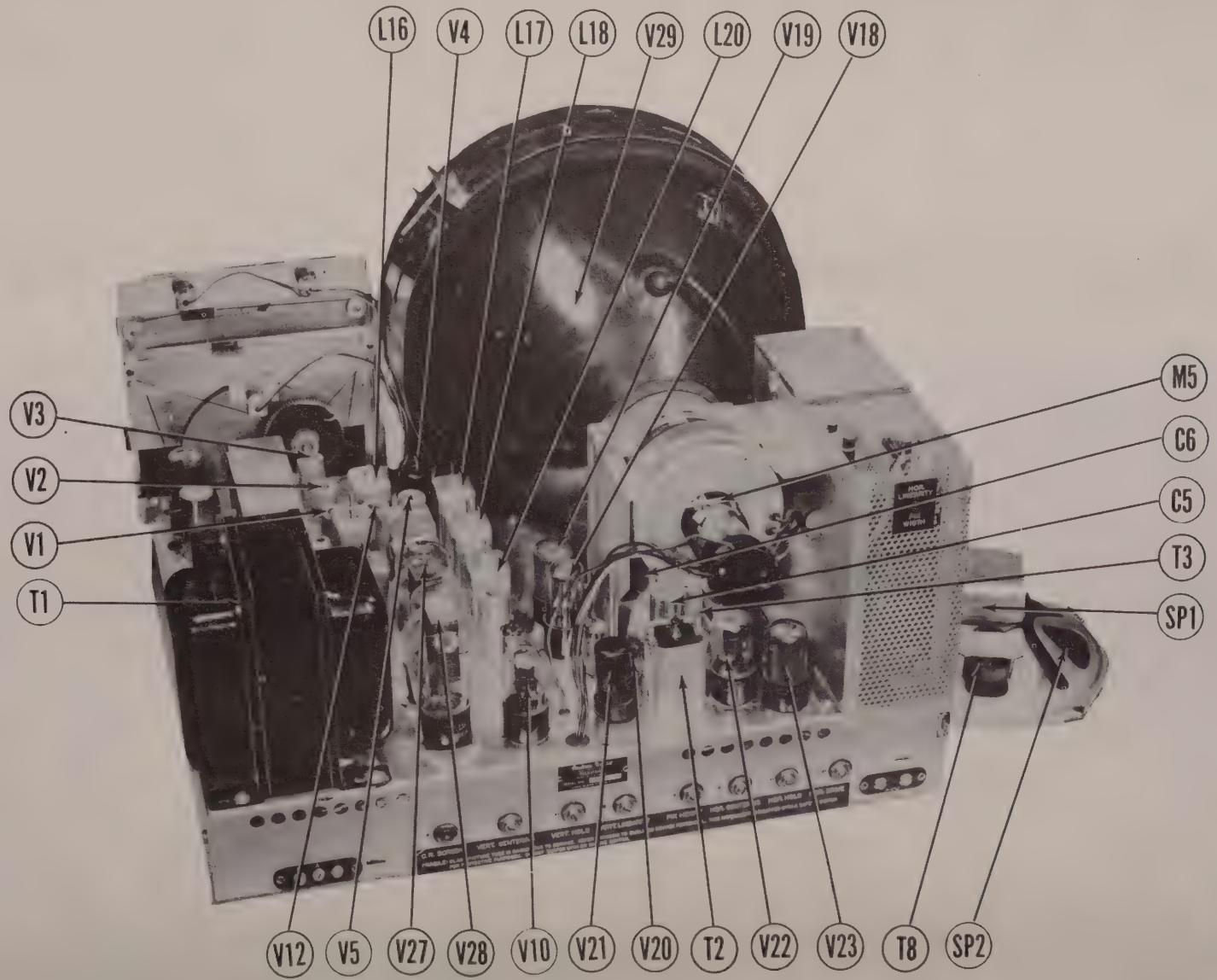
* Do not measure.
§ Taken with vacuum tube voltmeter.
◓ Measured from center-tap of T1.
▲ Measured in AM position.
Note: Contrast control set at maximum for these readings.

RESISTANCE READINGS

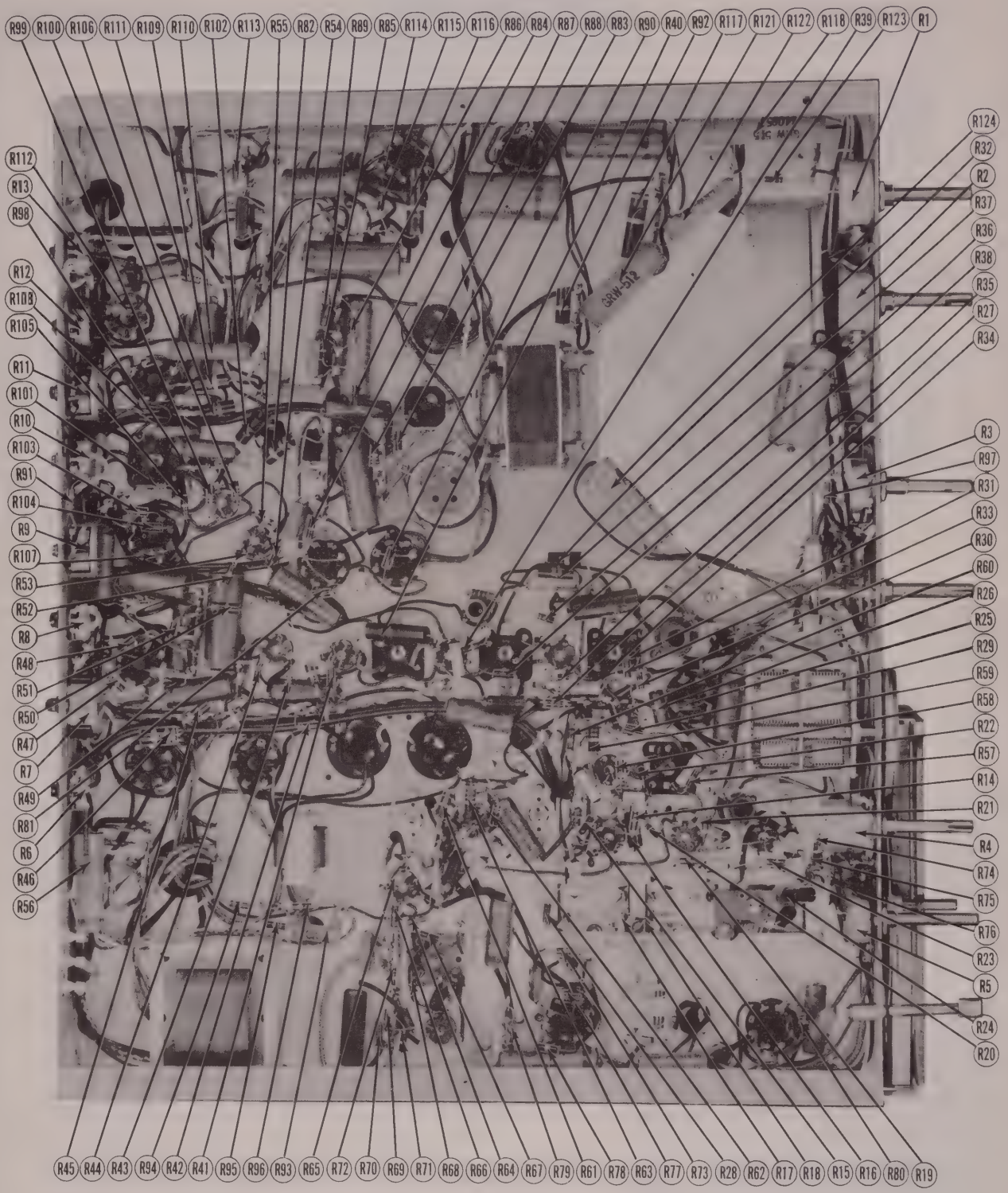
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†11KΩ	†11KΩ	.1Ω	0Ω	100Ω	100Ω	220Ω		
V 2	6AG5	200KΩ	47Ω	0Ω	.1Ω	†3KΩ	†68KΩ	47Ω		
V 3	6J6	†11KΩ	0Ω	.1Ω	0Ω	0Ω	12KΩ	0Ω		
▲ V 4	6SA7	0Ω	0Ω	†3KΩ	†18KΩ	22KΩ	.5Ω	.1Ω		
V 5	6AG5	100KΩ	47Ω	0Ω	.1Ω	♯23KΩ	♯35KΩ	47Ω		
V 6	6AG5	100KΩ	47Ω	0Ω	.1Ω	♯23KΩ	♯50KΩ	47Ω		
V 7	6AG5	15KΩ	100Ω	0Ω	.1Ω	♯12KΩ	♯5KΩ	100Ω		
V 8	6AL5	0Ω	4.7KΩ	0Ω	.1Ω	.5Ω	0Ω	0Ω		
V 9	6AU6	470KΩ	0Ω	0Ω	.1Ω	♯16KΩ	♯12KΩ	0Ω		
V 10	6K6GT	0Ω	.1Ω	♯8KΩ	♯5KΩ	470KΩ	2.8KΩ	0Ω	220Ω	
V 11	6C4	♯60KΩ	♯5KΩ	.1Ω	0Ω	♯60KΩ	0Ω	220KΩ		
V 12	6BA6	200KΩ	0Ω	0Ω	.1Ω	†3KΩ	†34KΩ	68Ω		
V 13	6BA6	19Ω	0Ω	0Ω	.1Ω	†2.5KΩ	†33KΩ	68Ω		
V 14	6AU6	.2Ω	0Ω	0Ω	.1Ω	†2.5KΩ	†33KΩ	120Ω		
V 15	6AL5	15KΩ	15KΩ	0Ω	.1Ω	500KΩ	0Ω	500KΩ		
▲ V 16	6SQ7	0Ω	4.7 Meg.	0Ω	470KΩ	470KΩ	†370KΩ	.1Ω	0Ω	
V 17	6V6GT	0Ω	0Ω	†650Ω	†230Ω	500KΩ	Inf.	.1Ω	390Ω	
V 18	6SN7GT	1 Meg.	♯30KΩ	0Ω	3 Meg. 1 Meg.	♯1 Meg. ♯500KΩ	0Ω	.1Ω	0Ω	
V 19	6SN7GT	2.2 Meg.	♯11KΩ	2.5KΩ 500Ω	2.2 Meg.	♯11KΩ	2.5KΩ 500KΩ	.1Ω	0Ω	
V 20	6AL5	1 Meg.	1.5 Meg.	0Ω	.1Ω	1000Ω	0Ω	1.5 Meg.		
V 21	6AC7	0Ω	0Ω	0Ω	1.5 Meg.	10Ω	♯27KΩ	.1Ω	♯23KΩ	
V 22	6K6GT	0Ω	0Ω	†6KΩ	♯17KΩ	80KΩ 30KΩ	50KΩ 15Ω	.1Ω	10Ω	
V 23	6SN7GT	470KΩ	♯1 Meg.	0Ω	0Ω	0Ω	0Ω	0Ω	.1Ω	
V 24	6BG6G	0Ω	0Ω	◓100Ω	1 Meg.	◓470KΩ	470KΩ	.1Ω	♯6KΩ	TOP CAP ♯6.5KΩ
V 25	5V4F	Inf.	♯6.5KΩ	Inf.	♯120Ω	Inf.	♯120Ω	Inf.	♯6.5KΩ	
V 26	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♯6.5KΩ
V 27	5U4G	Inf.	90KΩ	Inf.	60Ω	Inf.	62Ω	Inf.	90KΩ	
V 28	5U4G	7KΩ	7KΩ	Inf.	70Ω	Inf.	70Ω	Inf.	7KΩ	
V 29	12QP4	0Ω	1.2 Meg.	PIN 10 ♯110KΩ	PIN 10 ♯1KΩ	PIN 11 10KΩ	PIN 12 .1Ω			

▲ Measured in AM position.
† Measured from pin 8 of V27.
♯ Measured from pin 2 of V28.
◓ Measured from center-tap of T1.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW–RESISTOR IDENTIFICATION

BLOCK DIAGRAM
AM CONV. V4
AM DET. & AVC 1/2 V16
RF AMP V1
MIXER V2
OSC V3
1ST. SOUND IF V12
2ND. SOUND IF & AM IF V13
3RD. SOUND IF V14
RATIO DET. V15
AF AMP 1/2 V16
AUDIO OUTPUT V17
1ST. VIDEO IF V5
2ND. VIDEO IF V6
3RD. VIDEO IF V7
VIDEO DET V8
VIDEO AMP V9
VIDEO OUTPUT V10
DC RESTORER
SYNC. SEP. V11
SYNC. PULSES
SYNC. AMP 1/2 V18
VERT OSC 1/2 V18
VERT. AMP V19
HOR. PHASE DET. V20
HOR. AFC V21
HOR. OSC V22
HOR. DISCH. V23
HOR. OUTPUT V24
DAMPER V25
HV RECT. V26
V 29
LV RECT. V27
LV RECT. V28
B++ B+ B-

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	TV-FM RF		6J6	7BF	
V2	TV-FM Mixer		6AQ5	7BD	
V3	TV-FM Osc.		6J6	7BF	
V4	AM Converter		6SA7	6R	
V5	1st Video IF		6AQ5	7BD	
V6	2nd Video IF		6AQ5	7BD	
V7	3rd Video IF		6AQ5	7BD	
V8	Video Det.		6AL5	6BT	
V9	Video Amp.		6AU6	7BK	
V10	Video Output		6K6GT	7S	
V11	DC Restorer-Sync. Sep.	6C4	6C4	6BG	
V12	1st FM-TV Sound IF	6BA6	6BA6	7BK	
V13	2nd FM-TV Sound IF-AM IF	6BA6	6BA6	7BK	
V14	3rd FM-TV Sound IF	6AU6	6AU6	7BK	
V15	Ratio Det.	6AL5	6AL5	6BT	
V16	DET.-AVC-AF	6SQ7	6SQ7	8Q	
V17	Audio Output	6V6GT	6V6GT	7AC	
V18	Sync. Amp.-Vert. Osc.	6SN7GT	6SN7GT	6BD	
V19	Vert. Amp.	6SN7GT	6SN7GT	6BD	
V20	Hor. Phase Det.	6AL5	6AL5	6BT	
V21	Hor. AFC	6AC7	6AC7	6N	
V22	Hor. Osc.	6K6GT	6K6GT	7S	
V23	Hor. Disch.	6SN7GT	6SN7GT	6BD	
V24	Hor. Output	6BG6G	6BG6G	6BT	
V25	Damper	5V4G	5V4G	5L	
V26	HV Rectifier	1B3GT	1B3GT	3C	
V27	LV Rectifier	5U4G	5U4G	5T	
V28	LV Rectifier	5U4G	5U4G	5T	
V29A	Picture Tube	12QP4			
B	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	25	500	HCE-1321	AFH58K	UP11BJ			◓ Filter
B	40	500			976			▲ Filter
C2A	20	450	HCE-1320	AF44J	UP2250		EL-220	◓ Filter
B	20	450						▲ Filter
C3A	25	350	HCE-1322	AF88J	UP98JY975			◓ Filter
B	40	350						▲ Filter
C4A	20	350	HCE-1323	AF64H	UP2045C		UT-203	■ Filter
B	10	25					TVA-14	▲ Output Cath. Bypass
C5A	4	450	HCE-1313	AF22J	UP4BJ241		EL-210	▲ 1st V. Amp. Dec.
B	4	450						■ Sync. Sep. Plate Dec.
C6A	20	450	HCE-1319	AF4J20C	UP7BJ304			■ Decoupling
B	100	100						▲ Vert. Output Cath. Byp.
C7	2	25	HCE-1302	FRS150/4	BR215		TVA-12	Stabilizing Cap.
C8	1000	25	HCE-1312	AF200A	UP1M-25		EL-122	Bias Filter
C9	50	500	HCM-1614A	1468-00005	SW5Q5	GP1K-50	1FM-45	Isolation
C10	100		HCC-1910	1468-0001	SW5T1	GP1K-100	1FM-31	Ant. Coupling
C11	1.65	400	HCT-1003	P488-05	GT4S5		TM-15	RF Bypass
C12	100		HCC-1922	1468-0001	SW5T1	GP1K-100	1FM-31	RF Grid Filter
C13	500		HCC-1912	1468-0005	SW5T5	GP2K-500	1FM-35	RF Bypass
C14	500		HCC-1912	1468-0005	SW5T5	GP2K-500	1FM-35	RF Fil. Bypass
C15	10		HCC-1923			N750K-10		RF Coupling
C16	3-13		HCV-2115			TS2A-N3000-3-13		Fixed Padder
C17	3-13		HCV-2115			TS2A-N3000-3-13		Fixed Trimmer
C18	1.5-7		HCV-2116			TS2A-NP0-1.5-7		Fixed Padder
C19	10		HCC-1923			N750K-10		RF Coupling
C20	500		HCC-1912	1468-0005	SW5T5	GP2K-500	1FM-35	Mixer Screen Bypass
C21	500		HCC-1912	1468-0005	SW5T5	GP2K-500	1FM-35	Mixer Fil. Bypass
C22	3		HCC-1921			NP0K-3		Osc. Coupling
C23	5.5		HCC-1925			N750K-5		Osc. Grid Cap.
C24	1-8		HCV-2117			SS2-1-8		Fixed Trimmer
C25	500		HCC-1912	1468-0005	SW5T5	GP2K-500	1FM-35	RF Bypass
C26	500		HCC-1912	1468-0005	SW5T5	GP2K-500	1FM-35	Osc. Fil. Bypass
C27	100	500	HCM-1601A	1468-0001	SW5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C28	.05	400	HCT-1003	P488-05	GT4S5		TM-15	Osc. Anode Bypass
C29	.05	400	HCT-1003	P488-05	GT4S5		TM-15	AM Conv. Plate Dec.
C30	.05	400	HCT-1003	P488-05	GT4S5		TM-15	AVC Filter
C31	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	AVC Filter
C32	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	1st Grid Filter
C33	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	1st V. IF Screen Byp.
C34	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd V. IF Screen Byp.
C35	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Cath. Byp.
C36	50			1468-00005	5R5Q5	N750L-47	MS-45	Fixed Trimmer
C37	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C38	4.7		SK-GA-6	1468-000005	SW5V5	NP0K-5	MS-55	V. Diode Filter
C39	.05	400	HCT-1003	P488-05	GT4S5		TM-15	Video Coupling
C40	.05	400	HCT-1003	P488-05	GT4S5		TM-15	Video Coupling
C41	.25	400	HCT-1015	P488-25	GT4P25		TC-2	Video Coupling
C42	.25	400	HCT-1015	P488-25	GT4P25		TC-2	Brightness Cont. Bypass
C43	1.0	100	HCT-1027	484-1.0	GT2W1		TC-10	Bias Filter
C44	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	AVC Filter
C45	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Screen Bypass
C46	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Plate Dec.
C47	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Screen Byp.
C48	.05	400	HCT-1003	P488-05	GT4S5		TM-15	2nd S. IF Plate Dec.
C49	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Plate Dec.
C50	5000		HCC-1926	1467-005	1D5D5	811-005	29C1	2nd S. IF Fil. Bypass
C51	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd S. IF Cath. Byp.
C52	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd S. IF Screen Byp.
C53	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd S. IF Fil. Byp.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	5000		HCC-1926	1467-005	1D5D5	811-005	29C1	3rd S. IF Plate Dec.
C55	33		HCC-1928	1468-00004	SW5Q4	GP1K-33	1FM-44	Diode Load Cap.
C56	1500	500	HCM-1618-1	1467-0015	1W5D15	GP2L-0015	1FM-215	De-emphasis
C57	100	500	HCM-1601A	1468-0001	SW5T1	GP1K-100	1FM-31	Diode RF Filter
C58	100	500	HCM-1601A	1468-0001	SW5T1	GP1K-100	1FM-31	Diode RF Filter
C59	1000	500	HCM-1610C	1468-001	1W5D1	GP2L-001	1FM-21	Tone Comp.
C60	.1	200	HCT-1015	P288-1	GT2P1		TM-1	Tone Comp.
C61	.01	400	HCT-1022	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C62	.1	600	HCT-1002	P688-1	GT4P1		TM-1	AF Plate Decoupling
C63	.05	400	HCT-1003	P488-05	GT4S5		TM-15	Audio Coupling
C64	250	500	HCM-1604AK	1468-00025	SW5T25	GP2K-250	1FM-325	Tone Comp.
C65	.003	1200	HCT-1021	P1688-003	GT16S3		MB-23	Output Plate Bypass
C66	1500		HCC-1914	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C67	.1	200	HCT-1013	P288-1	GT2P1		TM-1	Sync. Coupling
C68	.01	600	HCT-1006	P688-01	GT6S1	GP2-335-01	TM-11	Vert. Sync. Coupling
C69	5000	500	HCM-1602A	1467-005	1D5D5	GP2M-005	1FM-25	Integrator Net.
C70	5000	500	HCM-1602A	1467-005	1D5D5	GP2M-005	1FM-25	Integrator Net.
C71	5000	1000	HCM-1603AK	1467-005	1D5D5	GP2M-005	1FM-25	Integrator Net.
C72	5000	1000	HCM-1603AK	1467-005	1D5D5	GP2M-005	1FM-25	Vert. Osc. Grid Cap.
C73	.1	600	HCT-1002	P688-1	GT6P1		TM-1	Vert. Discharge
C74	.1	600	HCT-1002	P688-1	GT6P1		TM-1	Vert. Sweep Coupling
C75	60	500	HCM-1612D					Hor. Sync. Coupling
C76	.015	400	HCT-1023	P488-015	GT6S15			Fixed Trimmer
C77	5000	500	HCM-1602A	1467-005	1D5D5	GP2M-005	1FM-25	AFC Filter
C78	.05	400	HCT-1003	P488-05	GT4S5		TM-15	AFC Filter
C79	5000	500	HCT-1602A	1467-005	1D5D5	GP2M-005	1FM-25	AFC Coupling
C80	.015	400	HCT-1023	P488-015	GT6S15			Phase Shifter
C81	.05	400	HCT-1003	P488-05	GT4S5		TM-15	Hor. Output Screen Byp.
C82	5000	500	HCM-1602A	1467-005	1D5D5	GP2M-005	1FM-25	Hor. Osc. Grid Cap.
C83	.05	600	HCT-1012	P688-05	GT6S5		TM-15	Hor. Osc. Screen Byp.
C84	500	1000	HCM-1609CK	1468-001	SW5T5		1FM-35	Differentiator Net.
C85	.01	600	HCT-1008	P688-01	GT6S1	GP2-335-01	TM-11	Hor. Sweep Coupling
C86	500	1000	HCM-1617CK	1468-0005	SW5T5		1FM-35	Hor. Discharge
C87	.01	600	HCT-1008	P688-01	GT6S1	GP2-335-01	TM-11	Hor. Sweep Coupling
C88	1.0	100	HCT-1027	484-1.0	GT2W1		TC-10	Hor. Output Cath. Byp.
C89	.1	600	HCT-1002	P688-1	GT6P1		TM-1	Hor. Output Screen Byp.
C90	.035	1000	HCT-1026	P1088-033				Damper Filter
C91	.05	1000	HCT-1025	P1088-05	GT16S5		TR-15	Damper Filter
C92	300	2000	HCM-1616G2K					Fixed Trimmer *
C93	500	10000	HCM-2701					HV Filter
C94	.1	600	HCT-1002	P688-1	GT6P1		TM-1	Acc. Anode Filter
C95	.05	400	HCT-1003	P488-05	GT4S5		TM-15	Video Coupling

* Some models use 150MMF in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	10KΩ	4	GRV-806-1		10-10,000	Focus Control, Wire Wound
R2	20KΩ	4	GRV-817-1		10-20,000	Brightness Control, Wire Wound
R3A	10KΩ	‡	GRV-818-1	Q14-116	AM-30-V	Contrast Control
B	Shaft		Not Req.	Not Req.	KSB-3	Attach to R3A Per Instructions
R4A	500KΩ	‡	GRV-812-6	Q13-133X	AT-78	Volume Control Tapped @ 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R4A Per Instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R4A Per Instructions
R5	500KΩ	‡	GRV-825			Tone Control and Dial Light Pushswitch
R6	250KΩ	‡	GRV-822	Q11-130	M-55-S	Cathode Ray Tube Screen Control
R7	20Ω	2	GRV-810-1	W-20X10	58-20CT	Vert. Centering Control, Tapped @ 10Ω
R8	2 Meg.	‡	GRV-812-1	Q11-139	M-83-S	Vert. Hold Control
R9	2000Ω	2	GRV-824	W-2000	58-2000	Vert. Linearity Control, Wire Wound
R10	2 Meg.	‡	GRV-812-1	Q11-139	M-82-S	Height Control
R11	40Ω	2	GRV-823	W-40	43-40	Horiz. Centering Control, Wire Wound
R12	60KΩ	‡	GRV-807-1	Q11-123	M-44-S	Horiz. Hold Control
R13	60KΩ	‡	GRV-807-1	Q11-123	M-44-S	Horiz. Drive Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	IDENTIFICATION CODES
					ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R14	22Ω	‡	GRC-218		RF Cathode
R15	10Ω	‡	GRC-216		RF Grid
R16	10KΩ 5%	2	GRC-263		RF Plate
R17	12KΩ	‡	GRC-272		RF Plate Coil Shunt
R18	12KΩ	‡	GRC-272		Mixer Grid Coil Shunt
R19	100KΩ 20%	‡	GRC-225		Mixer Grid
R20	47Ω	‡	GRC-211		Mixer Cathode
R21	68KΩ	‡	GRC-204		Mixer Screen
R22	2200Ω	‡	GRC-219		Mixer Plate Decoupling
R23	12KΩ	‡	GRC-272		Osc. Grid
R24	10KΩ 5%	2	GRC-267		Osc. Plate
R25	22KΩ	‡	GRC-201	BTS-22K	AM Osc. Grid
R26	15KΩ	2	GRC-237	BT-2-15K	AM Osc. Anode
R27	2700Ω	‡	GRC-275	BTS-2700	AM Conv. Plate Decoupling
R28	2.2 Meg.	‡	GRC-230	BTS-2.2 Meg.	AVC Network
R29	15KΩ 5%	‡	GRC-223		1st Video IF Grid
R30	47Ω	‡	GRC-211		1st Video IF Cathode
R31	47KΩ	‡	GRC-207		1st Video IF Screen See Note 1
R32	22KΩ	‡	GRC-238		1st Video IF Plate
R33	100KΩ 20%	‡	GRC-225		Voltage Divider See Note 3
R34	4700Ω 5%	‡	GRC-275		2nd Video IF Grid
R35	47Ω	‡	GRC-211		2nd Video IF Cathode
R36	47KΩ	‡	GRC-207		2nd Video IF Screen
R37	22KΩ 5%	2	GRC-238		2nd Video IF Plate
R38	15KΩ 5%	‡	GRC-223		3rd Video IF Grid
R39	100Ω	‡	GRC-216		3rd Video IF Cathode
R40	10KΩ 5%	2	GRC-263		3rd Video IF Plate
R41	33KΩ 5%	‡	GRC-260	BTS-33K-5%	Peaking Coil Shunt
R42	4700Ω	‡	GRC-205	BTS-4700	Video Det. Diode Load
R43	470KΩ	‡	GRC-228	BTS-470K	Video Amp. Grid
R44	18KΩ 5%	‡	GRC-261	BTS-18K-5%	Peaking Coil Shunt
R45	3900Ω 5%	1	GRC-262	BTA-3900-5%	Video Amp. Plate
R46	68Ω	2	GRC-257	BT-2-6800	Filter
R47	470KΩ	‡	GRC-228	BTS-470K	Video Output Grid
R48	22Ω	‡	GRC-218	BW-½-220	Video Output Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	IDENTIFICATION CODES
R49	10KΩ 5%	‡	GRC-222	BTS-10K-5%	Peaking Coil Shunt
R50	330Ω	1	GRC-254	BTA-3300	Video Output Plate
R51	470Ω 5%	‡	GRC-273	BTS-4700-5%	Phase Correction
R52	1 Meg.	‡	GRC-274	BTS-1 Meg.	Picture Tube Grid
R53	220KΩ	‡	GRC-270	BTS-220K	DC Rest. Load
R54	47KΩ	‡	GRC-207	BTS-47K	DC Rest. Load
R55	620KΩ	‡	GRC-246	BTS-620K	Voltage Divider
R56	150KΩ	‡	GRC-243	BTS-150K	Voltage Divider
R57	100KΩ 20%	‡	GRC-225	BTS-100K	AVC Network
R58	68Ω	‡	GRC-214		1st Sound IF Cathode
R59	33KΩ	1	GRC-281		1st Sound IF Screen
R60	2200Ω	‡	GRC-219		1st Sound IF Plate Decoupling
R61	470Ω	1	GRC-282	BTA-470	Voltage Dropping
R62	68Ω	‡	GRC-214		2nd Sound IF Cathode
R63	33KΩ	1	GRC-281		2nd Sound IF Screen
R64	2200Ω	‡	GRC-219		2nd Sound IF Plate Decoupling
R65	120Ω	‡	GRC-217		3rd Sound IF Cathode See Note 2
R66	33KΩ	‡	GRC-203		3rd Sound IF Screen
R67	2200Ω	‡	GRC-219		3rd Sound IF Plate Decoupling
R68	620Ω	‡	GRC-218	BW-½-220	Balancing
R69	15KΩ 5%	‡	GRC-223	BTS-15K-5%	Ratio Det. Diode Load
R70	15KΩ 5%	‡	GRC-223	BTS-15K-5%	Ratio Det. Diode Load
R71	100KΩ 20%	‡	GRC-225	BTS-100K	AVC Network
R72	330Ω	‡	GRC-253	BTS-330K	De-emphasis
R73	47KΩ	‡	GRC-207	BTS-47K	Diode Filter
R74	100KΩ 20%	‡	GRC-225	BTS-100K	Tone Compensation
R75	6800Ω	‡	GRC-221	BTS-6800	Tone Compensation
R76	2200Ω	‡	GRC-219	BTS-2200	Tone Compensation
R77	4.7Meg.20%	‡	GRC-242	BTS-4.7 Meg.	AF Grid
R78	220KΩ	‡	GRC-270	BTS-220K	AF Plate
R79	150KΩ	‡	GRC-243	BTS-150K	AF Plate Decoupling
R80	390Ω	1	GRC-277	BTA-390	Output Cathode
R81	1 Meg.20%	‡	GRC-274	BTS-1 Meg.	Vert. Buffer Grid
R82	6800Ω	2	GRC-257	BT-2-6800	Vert. Buffer Plate
R83	22KΩ	‡	GRC-201	BTS-22K	Voltage Divider
R84	15KΩ 5%	‡	GRC-223	BTS-15K-5%	Integrator
R85	68000Ω	‡	GRC-221	BTS-6800	Integrator
R86	6800Ω	‡	GRC-221	BTS-6800	Integrator
R87	1 Meg.	‡	GRC-274	BTS-1 Meg.	Vert. Osc. Grid
R88	470KΩ	‡	GRC-228	BTS-470K	Vert. Osc. Plate
R89	3300Ω	‡	GRC-250	BTS-3300	Vert. Peaking
R90	2.2Meg.20%	‡	GRC-230	BTS-2.2 Meg.	Vert. Amp. Grid
R91	470Ω	‡	GRC-213	BTS-470	Vert. Amp. Cathode
R92	10KΩ	2	GRC-263	BT-2-10K	Filter
R93	25Ω	5	GRW-511	AB-25	Voltage Divider Wire Wound
R94	2700Ω	‡	GRC-275	BTS-2700	Bias Network
R95	2700Ω	‡	GRC-275	BTS-2700	Bias Network
R96	1500Ω	‡	GRC-259	BTS-1500	Bias Network
R97	100KΩ 20%	‡	GRC-225	BTS-100K	Voltage Divider
R98	1 Meg.5%	‡	GRC-229	BTS-1 Meg.5%	Horiz. Phase Det. Load
R99	470KΩ	‡	GRC-228	BTS-470K	Horiz. Phase Det. Load
R100	470KΩ	‡	GRC-228	BTS-470K	Horiz. Phase Det. Load
R101	470KΩ	‡	GRC-228	BTS-470K	Horiz. AFC Filter Network
R102	22KΩ 5%	2	GRC-238	BT-2-22K-5%	Filter
R103	560Ω	2	GRC-250	BTS-560	Horiz. AFC Grid
R104	10Ω 5%	‡	GRC-253	BW-½-10-5%	Horiz. AFC Cathode
R105	33KΩ	‡	GRC-203	BTS-33K	Horiz. AFC Screen
R106	22K 5%	2	GRC-238	BT-2-22K-5%	Horiz. AFC Plate
R107	68KΩ	‡	GRC-204	BTS-68K	Voltage Divider
R108	27KΩ	‡	GRC-224	BTS-27K	Horiz. Osc. Grid
R109	15KΩ	2	GRC-237	BT-2-15K	Horiz. Osc. Screen
R110	6000Ω	5	GRW-509	AB-5000	Horiz. Osc. Plate Wire Wound
R111	6800Ω	‡	GRC-221	BTS-6800	Differentiator
R112	470KΩ	‡	GRC-228	BTS-470K	Horiz. Discharge Grid
R113	1 Meg. 5%	‡	GRC-229	BTS-1 Meg.5%	Horiz. Discharge Plate
R114	4700Ω	‡	GRC-205		Parasitic Supp.
R115	470KΩ	‡	GRC-228	BTS-470K	Horiz. Output Grid
R116	100Ω	2	GRC-235	BW-2-100	Horiz. Output Cathode
R117	4700Ω	2	GRC-236	BT-2-4700	Horiz. Output Screen
R118	6000Ω	25	GRW-515		Damper Filter Wire Wound
R119	3.9Ω	‡	GRC-278		HV Rect. Filament
R120	680KΩ	‡	GRC-276		HV Filter
R121	900Ω 5%	20	GRW-512	DG-850	Filter Wire Wound
R122	4000Ω 5%	10	GRW-513	AB-4000	Filter Wire Wound
R123	6800Ω	‡	GRC-221	BTS-6800	Voltage Divider
R124	1.5Ω	20	GRW-514		Filament Dropping Wire Wound

Note 1. Some models use 220Ω resistor in this application.
Note 2. Some models use 68Ω resistor in this application.
Note 3. Not used in all models.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: ANDREA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.2Ω	SL-4006	ST-117 ‡ MOD.P8-T	8A31 ‡	‡ Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	3/4"				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.4A	800VCT .220ADC @ 5A 510VCT .114ADC	5VAC @ 3A	5VAC @ 3A	ST-3019			
		SEC. 4	SEC. 5					
		6.3VAC @ 6.3A	6.3VAC @ 3.6A					

ANDREA MODELS BT-VK12, CVK-126, COVK-125, T-VK12, TVK-127B,M

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA ANDREA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	NOTES
T2	44Ω CT	40Ω Tap @ 30Ω	SA-307				Hor. Osc. Trans.
T3	170Ω	1400Ω	ST-3020	A-8121	A-4000	TBO-2	Vert. Block Osc. Trans
T4	420Ω	SEC. 1	ST-3018	A-8117		TFB-1	Hor. Output Trans.
	Tap @ 180Ω	9Ω Tap @.6Ω					
		SEC. 2 0Ω					
T5	580Ω	6.8Ω	ST-3010	A-8815	A-3035	TSO-1	Vert.Output Trans.
T6A	14Ω		ST-3013	DY-1			Hor.Deflection Coil
B	64Ω						Vert.Deflection Coil
T7	6300Ω		ST-3014-2				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ANDREA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
T8	6000Ω	3.8Ω	415Ω	.5Ω	Part of SL-4006	A-3849	A-2902	RO-201	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ANDREA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
L1	.027A	500Ω	9 Henries	ST-3021	C-1215†	C-2976 †	R-1230†	† Drill one new mounting hole.
L2	.087A	200Ω	7 Henries	ST-3016	C-1709	C-2993 †	R-885 †	
L3	.200A	100Ω	5 Henries	ST-3017	C-2325	C-2991 †	TR-4200	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ANDREA PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L4	Ant. Coil	.1Ω		SA-278		Part of tuner.
L5	RF End Inductor	0Ω		SA-319		Part of tuner.
L6	RF End Inductor	0Ω		SA-321		Part of tuner.
L7	RF Plate	0Ω				Part of inductuner.
L8	Band Pass	1Ω		SA-137		Part of tuner.
L9	Mixer End Inductor	0Ω		SA-284		Part of tuner.
L10	Mixer End Inductor	0Ω		SA-320		Part of tuner.
L11	Mixer Grid	0Ω				Part of inductuner.
L12	Osc. End Inductor	0Ω		SA-318		Part of tuner.
L13	Osc. Coil	0Ω				Part of inductuner.
L14	Osc. Shunt	0Ω		SA-316		Part of tuner.
L15	RF Choke	1Ω		SA-283		
L16	1st Video IF and Sound Take-Off	.5Ω	.1Ω	SA-289-1		
L17	2nd Video IF	.5Ω		SA-290-1		
L18	3rd Video IF	.5Ω		SA-291-1		
L19	4th Video IF	.5Ω		SA-287		
L20	5th Video IF	.5Ω		SA-292-1		
L21	Peaking	8.2Ω		SA-284		
L22	Peaking	7.5Ω		SA-285		
L23	Peaking	8.2Ω		SA-284		
L24	Peaking	8.2Ω		SA-284		
L25	Peaking	8.2Ω		SA-284		
L26	Peaking	6.5Ω		SA-286		
L27	1st Sound IF	.2Ω	.2Ω	SA-312		
L28	2nd Sound IF	.2Ω	.2Ω	SA-313		
L29	Ratio Det. Trans.	.2Ω	.2Ω	SA-311		
L30	AM RF Coil	35Ω	8Ω	SA-297-1		
L31	AM Osc.	1Ω	5.5Ω	SA-298-1	14-1060	
L32	1st AM IF	19.5Ω	19.5Ω	SA-309-A	16-6658	
L33	2nd AM IF	18.5Ω	18.5Ω	SA-310-D	16-6660	
L34	Width Control	.2Ω		SA-314		
L35	Hor. Linearity	44Ω		SA-315		
L36	Fil. Choke	.3Ω		SA-280		
L37	Fil. Choke	.3Ω		SA-280		
L38	Fil. Choke	.3Ω		SA-280		

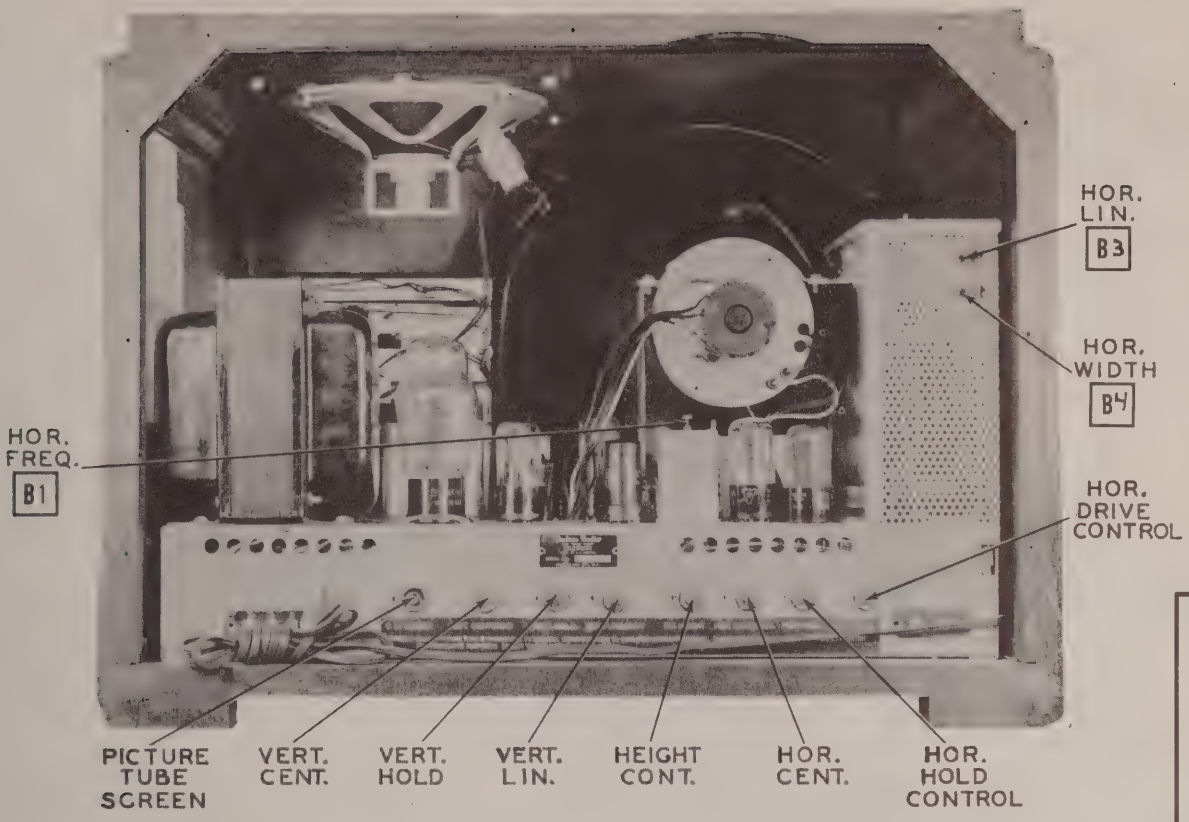
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ANDREA PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.25	Blue			Type #44
M2	Bayonet	6-8	.25	Blue			Type #44
M3	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M4	RF Tuner	FM-5113	Inductuner only.
M5	Ion Trap	FM-5129	PM-used on 12LP4 only.
M6	Band Switch	FM-5111	Includes wafer and two snap switches.
M7	Tuning Cap	HCV-2112	(14-427MMF, 14-427MMF) WO/T

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CABINET – REAR VIEW

HORIZONTAL OSCILLATOR ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the vertical hold control to "sync" the picture vertically.

Set the contrast control to slightly less than normal. The picture should be very thin and washed out.

Set the horizontal hold control to the mid position of its range.

Adjust the horizontal frequency slug (B1) to the center of the range over which the picture "syncs" horizontally.

If the picture shows a blanking bar or shows ripples in the picture adjust the horizontal phase slug (B2) until bar moves off of the screen, or until unstable condition disappears.

HORIZONTAL LINEARITY ADJUSTMENTS

These adjustments should be made with a test pattern received from a TV station.

Properly center the picture with the centering controls.

Turn the horizontal drive control until the extreme right and left edges of the picture are equal.

Adjust the horizontal linearity slug (B3) for best overall horizontal linearity.

Adjust the horizontal width slug (B4) for proper width of the picture.

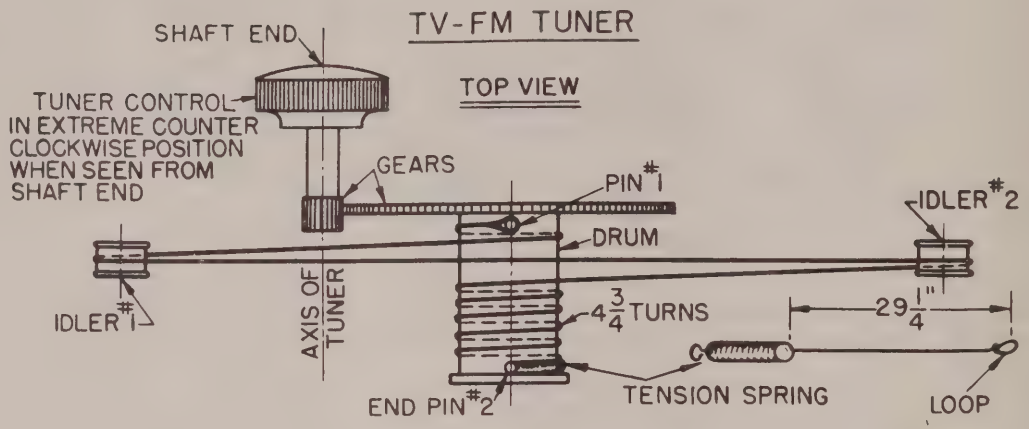
Due to the interaction between the horizontal linearity adjustments, it is recommended that the entire procedure be repeated.

DISASSEMBLY INSTRUCTIONS

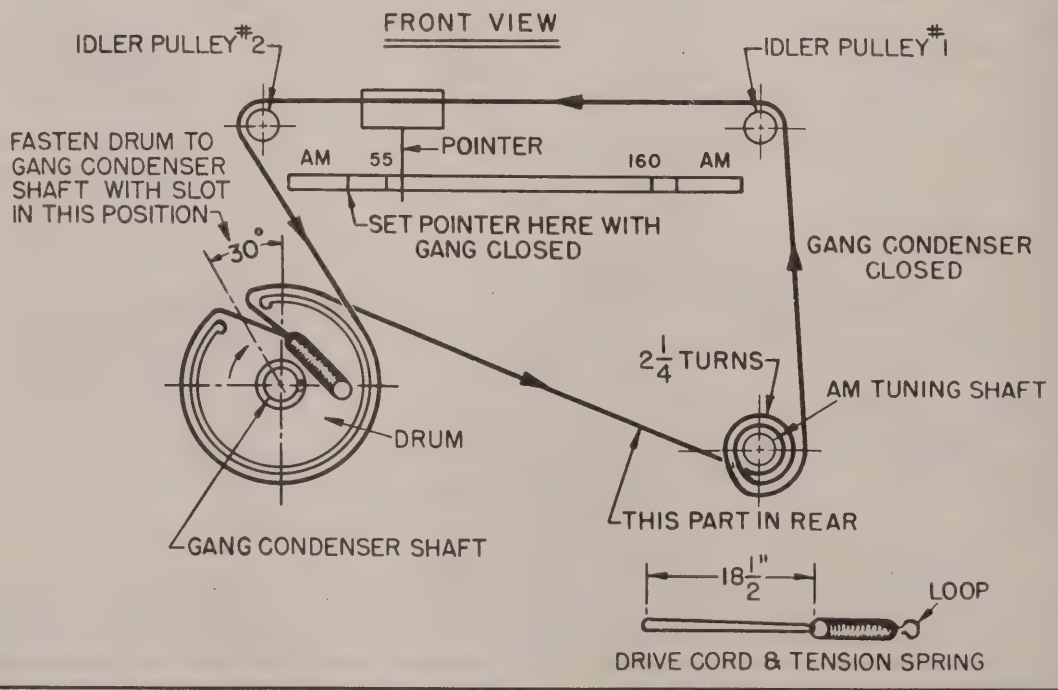
1. Loosen the screw from tuning knob. Remove knob.
2. Loosen the screw from tone control knob. Remove knob.
3. Remove 6 push-on type knobs from other controls.
4. Remove 9 screws holding rear cover. Remove cover.
5. Remove speaker plug.
6. Remove four 7/16" hex head bolts holding chassis to cabinet.
7. Remove 2 screws with red heads from bottom sides of cabinet.
8. Remove chassis.
9. Remove four 5/16" hex nuts holding speaker to cabinet. Remove speaker.

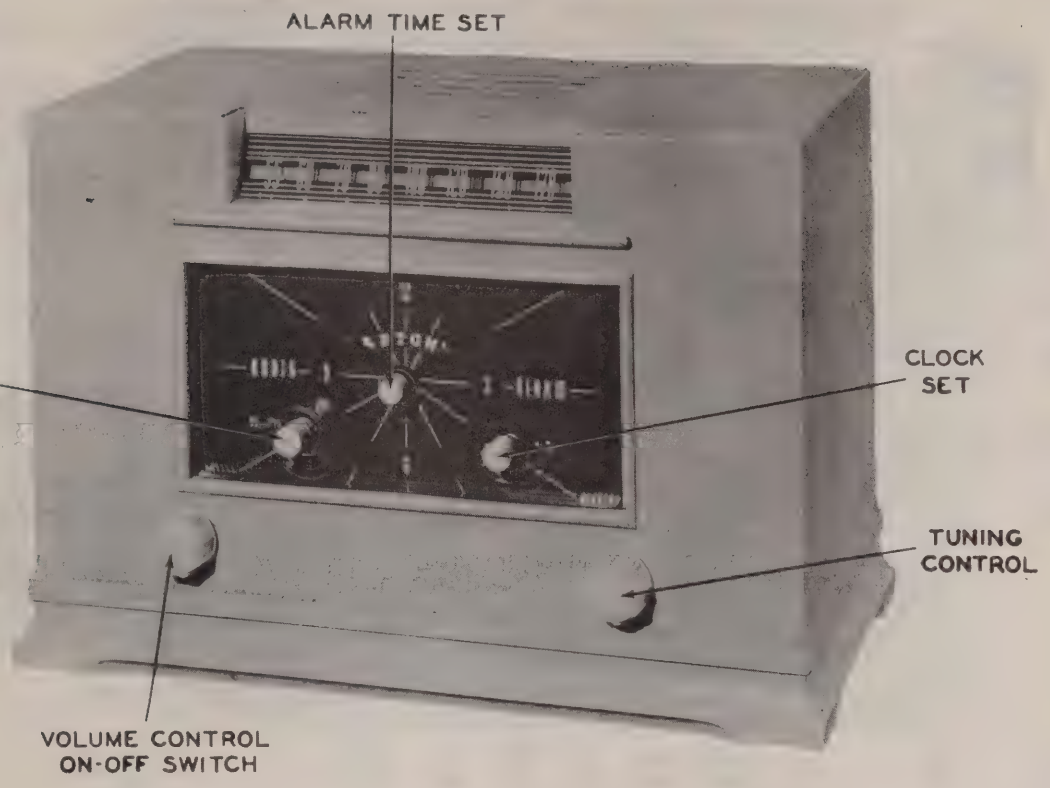
DIAL CORD STRINGING

TV-FM TUNER



AM TUNER





ARTONE MODEL 524

ARTONE MODEL 524

ARTONE MODEL 524

TRADE NAME	Artone, Model 524
SUPPLIER	Affiliated Retailers, Inc., Empire State Bldg., New York 1, New York
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FIVE)	Types 14Q7 Converter, 14A7 IF Amp., 14B6 DET-AVC-AF, 50A5 Power Output, 35Y4 Rect.
POWER SUPPLY	110-120 Volts AC RATING: .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1720KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

To set dial pointer, turn the tuning gang fully closed and set the pointer 1 5/8" to the right of the left hand end of the dial backplate.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to stator of rear section of tuning gang. Low side to B-.	455KC (400~ Mod.)	Quiet point of high freq. end of dial.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.		Loop	1720KC (400~ Mod.)	Tuning gang fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC (400~ Mod.)	Tune for max. output	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ARTONE PART No.	STANDARD REPLACEMENT		
V1	Converter	14Q7	14Q7	8AL	
V2	IF Amp.	14A7	14A7	8V	
V3	DET-AVC-AF	14B6	14B6	8W	
V4	Power Output	50A5	50A5	6AA	
V5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ARTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	150		PRS150/40-	EDL-4415		TA-330	Filter Red
B	30	150		30				Filter Red
C2	2000	500		1467-002	1W5D2	GP2M-002	1FM-22	Ext. Ant. Coupling
C3	250	500		1468-00025	5W5T25	GP2K-250	1FM-325	Osc. Grid Cap.
C4	.02	200		P488-02	GT2S2		TM-12	AVC Filter
C5	250	500		1468-00025	5W5T25	GP2K-250	1FM-325	Diode RF Filter
C6	.005	400		P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C7	250	500		1468-00025	5W5T25	GP2K-250	1FM-325	AF Plate Bypass
C8	.02	600		P688-02	GT6S2		TM-12	Audio Coupling
C9	6800	300		1467-007	1D3D7	GP2-334-0068	1FM-27	Output Plate Bypass
C10	.2	200		P488-22	GT4P2		72P53	Line Isolation
C11	.05	400		P488-05	GT4S5		TM-15	Line Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ARTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	A-9.066	Q13-133	15/16-60-Z	Volume control
B	Switch		Not Req.	76-1 *	Switch SPST #	

* Attach to R1A per instructions.
\# Attached at factory.

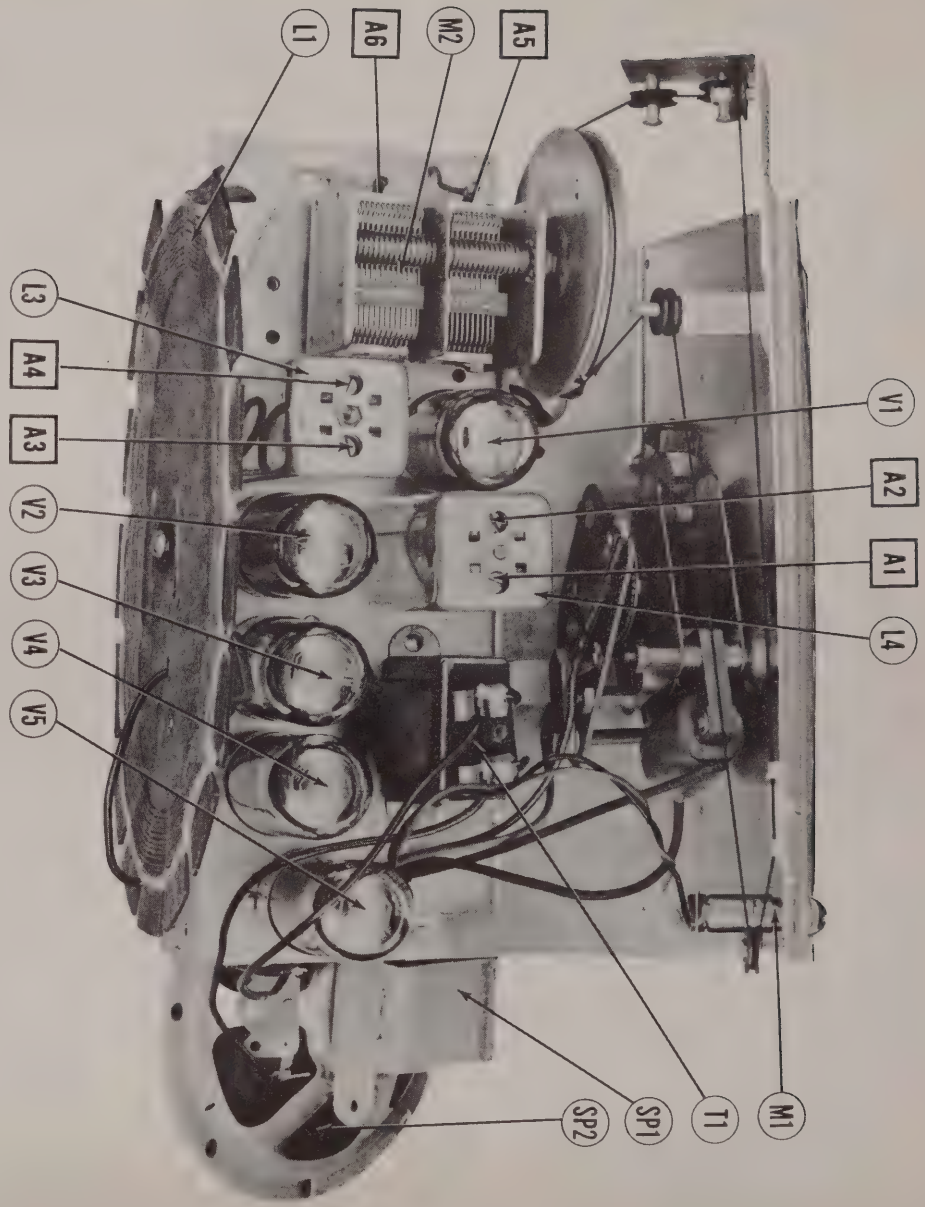
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARTONE PART No.	IRC PART No.	
R2	20KΩ	½		BTS-22K	Osc. Grid
R3	15 Meg.	½		BTS-15 Meg.	AVC Network
R4	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R5	15 Meg.	½		BTS-15 Meg.	AF Grid
R6	400KΩ	½		BTS-470K	AF Plate
R7	400KΩ	½		BTS-470K	Output Grid
R8	170Ω	½		BW-½-150	Output Cathode
R9	220KΩ	½		BTS-220K	Isolation
R10	1000Ω	2		BW-2-1000	Filter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8000Ω	3.4Ω	830Ω	.4Ω		A-3850		RO-301	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ARTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105		
SP1	PM	3.4Ω		MOD.P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

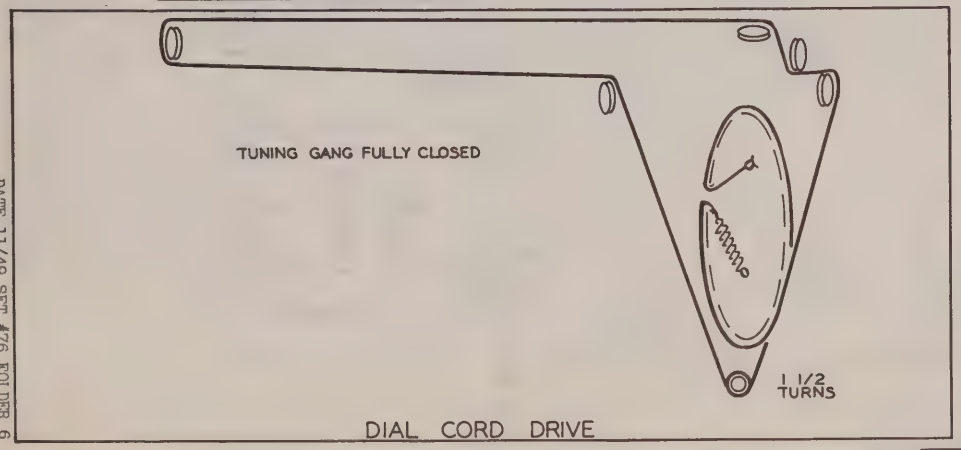
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ARTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	Loop Ant.	0Ω	1.3Ω		
L2	Osc. Coil	6.2Ω			14-1060
L3	Input IF	31Ω	31Ω		16-6666
L4	Output IF	31Ω	31		16-6667

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ARTONE PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	7.5	.2	White			Type #51

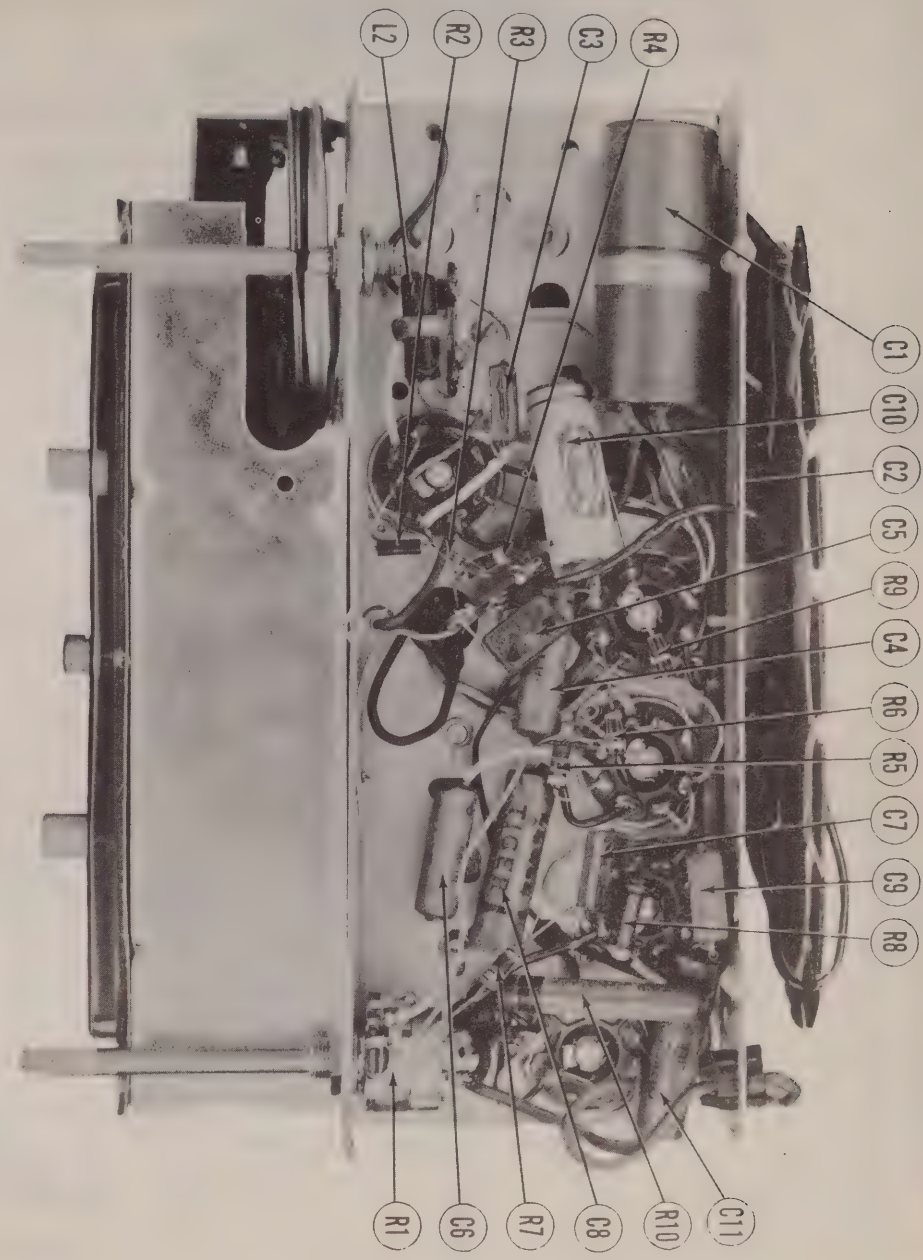
MISCELLANEOUS

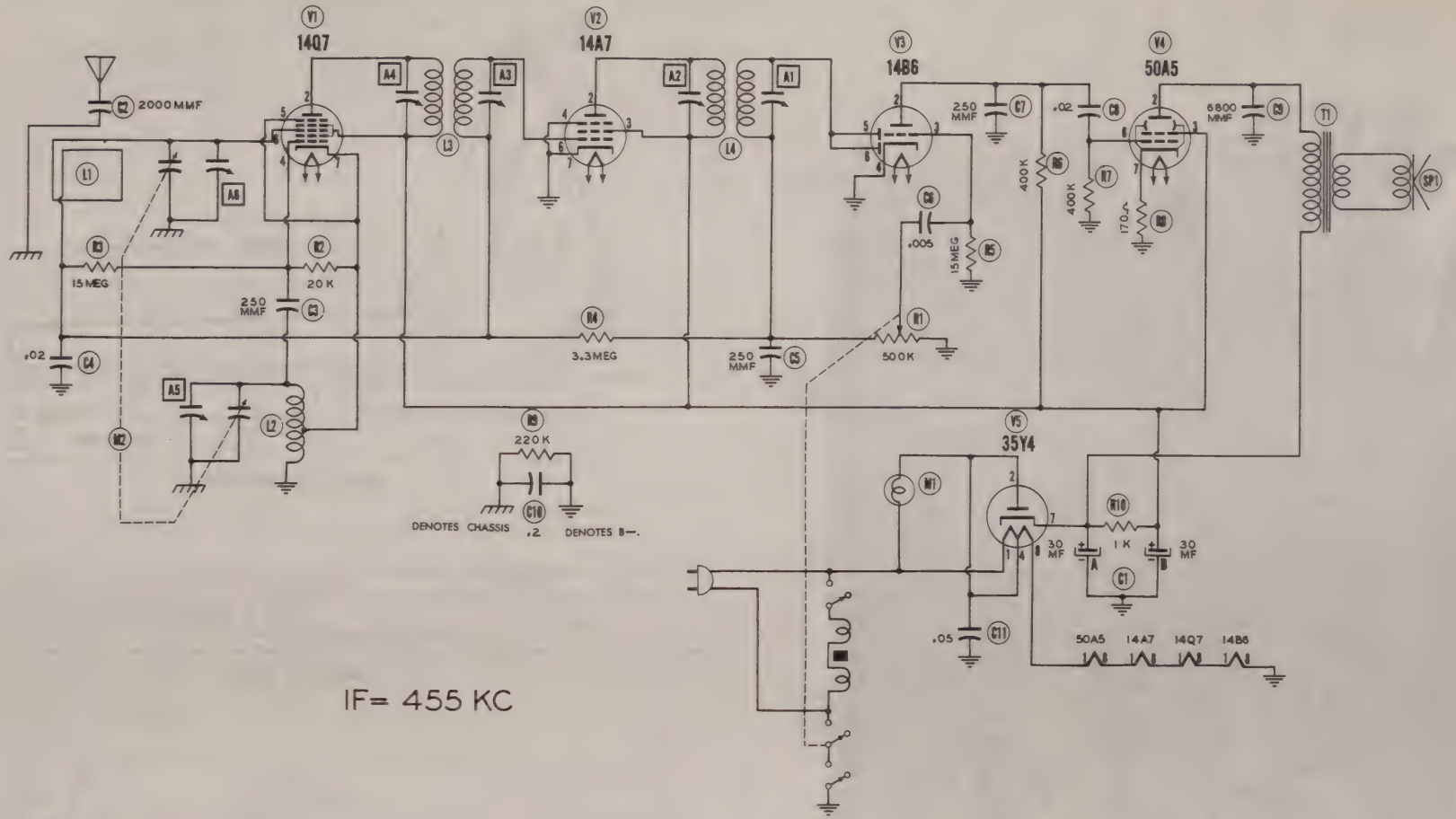
ITEM No.	PART NAME	ARTONE PART No.	NOTES
M2	2 Gang. Var. Cap.		(16-461MMF, 17-176MMF)



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14Q7	24VAC	97VDC	97VDC	§-10VDC	0V	0V	0V	10VAC
V 2	14A7	37VAC	97VDC	97VDC	0V	0V	-.4VDC	0V	24VAC
V 3	14B6	10VAC	60VDC	-.5VDC	0V	-.7VDC	-.7VDC	0V	0V
V 4	50A5	88VAC	95VDC	97VDC	0V	0V	.1VDC	6.6VDC	37VAC
V 5	35Y4	117VAC	114VAC	0V	114VAC	117VAC	125VDC	125VDC	87VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14Q7	24Ω	†100Ω	†100Ω	20KΩ	.1Ω	3.8 Meg.	.1Ω	13Ω
V 2	14A7	36Ω	†100Ω	†100Ω	0Ω	220KΩ	3.8 Meg.	0Ω	24Ω
V 3	14B6	13Ω	†400KΩ	10 Meg.	0Ω	500KΩ	500KΩ	0Ω	0Ω
V 4	50A5	80Ω	1650Ω	†100Ω	0Ω	0Ω	400KΩ	170Ω	36Ω
V 5	35Y4	100Ω	97Ω	Inf.	97Ω	100Ω	100KΩ	100KΩ	80Ω

† Measured from pin 7 of V5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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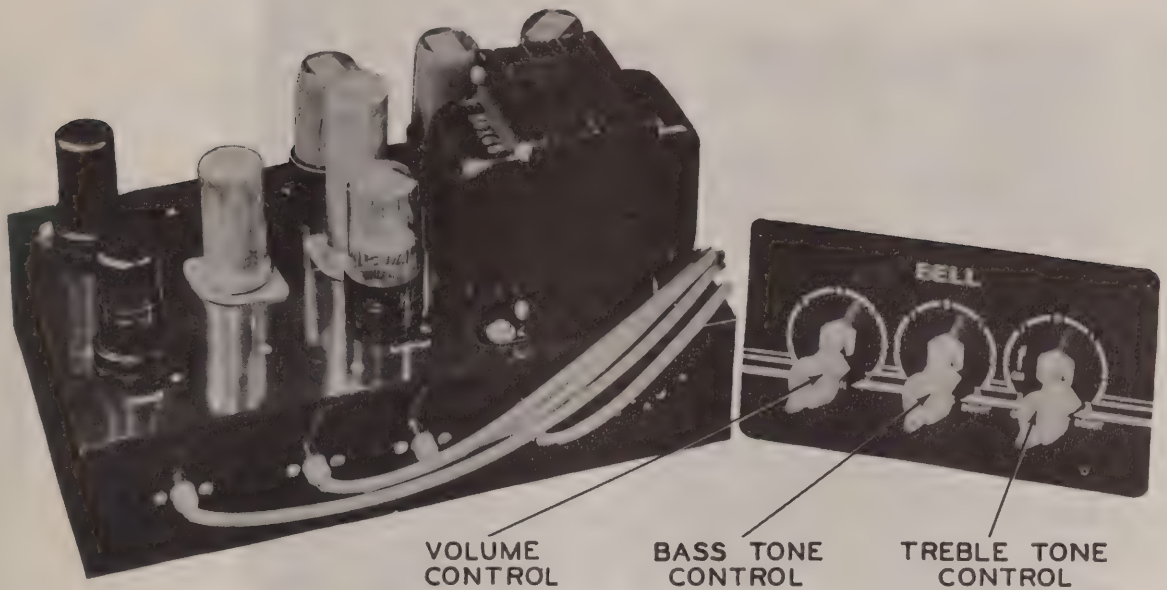
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



BELL SOUND
MODEL 2122R

BELL SOUND
MODEL 2122R

BELL SOUND MODEL 2122R

TRADE NAME	Bell Sound, Model 2122R
MANUFACTURER	Bell Sound System, Inc., 1183 Essex Ave., Columbus 7, Ohio
TYPE SET	AC Operated 4 Channel Audio Amplifier with Remote Control Unit
TUBES(SIX)	Types 6SC7 Pre Amp., 6SC7 1st AF Amp., 6SL7GT 2nd AF-Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING: .67 Amp. @ 117 Volts AC

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DATE 11/49 SET #76 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Pre Amp.	6SC7	6SC7	8S	
V2	1st AF Amp.	6SC7	6SC7	8S	
V3	2nd AF Amp.- Phase Inverter	6SL7GT	6SL7GT	8BD	
V4	Power Output	6V6GT	6V6GT	7AC	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450		AF44J	UP2245		EL-220	▲ Filter
B	20	450						■ Filter
C2A	10	450		AF22J	UP1145		EL-210	▲ Filter
B	10	450						■ Filter
C3	10	25		PRS25/10	BR102A		TVA-5	Output Cathode Bypass
C4	10	25		PRS25/10	BR102A		TVA-5	Audio Cathode Bypass
C5	150	50		PRS50/100	BRH5015		UHC-105	Audio Cathode Bypass
				PRS50/50			TA-550	
C6	.25	150		P488-25	GT2P25		TC-2	Audio Coupling
C7	.25	150		P488-25	GT2P25		TC-2	Audio Coupling
C8	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	Audio Coupling
C9	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	Audio Coupling
C10	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C11	.02	600		P688-02	GT6S2		TM-12	Audio Grid Filter
C12	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C13	300	500		1468-0003	5W5T3	GP2K-300	MS-33	Tone Compensation Note
C14	.02	600		P688-02	GT6S2		TM-12	Audio Coupling
C15	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C16	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C17	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	Output Grid Bypass
C18	.001	600		P688-001	GT6D1	GP2L-001	TM-21	Tone Compensation
C19	.003	600		P688-003	GT6D3	GP2M-003	TM-23	Tone Compensation
C20	.003	600		P688-003	GT6D3	GP2M-003	TM-23	Tone Compensation
C21	500	500		1468-0005	5W5T5	GP2K-500	1FM-35	Tone Compensation
C22	70	500		1468-000075	5W5Q7	GP1K-68	1FM-475	Tone Compensation

Note. Some models use 100MMFD and 200MMFD in parallel.

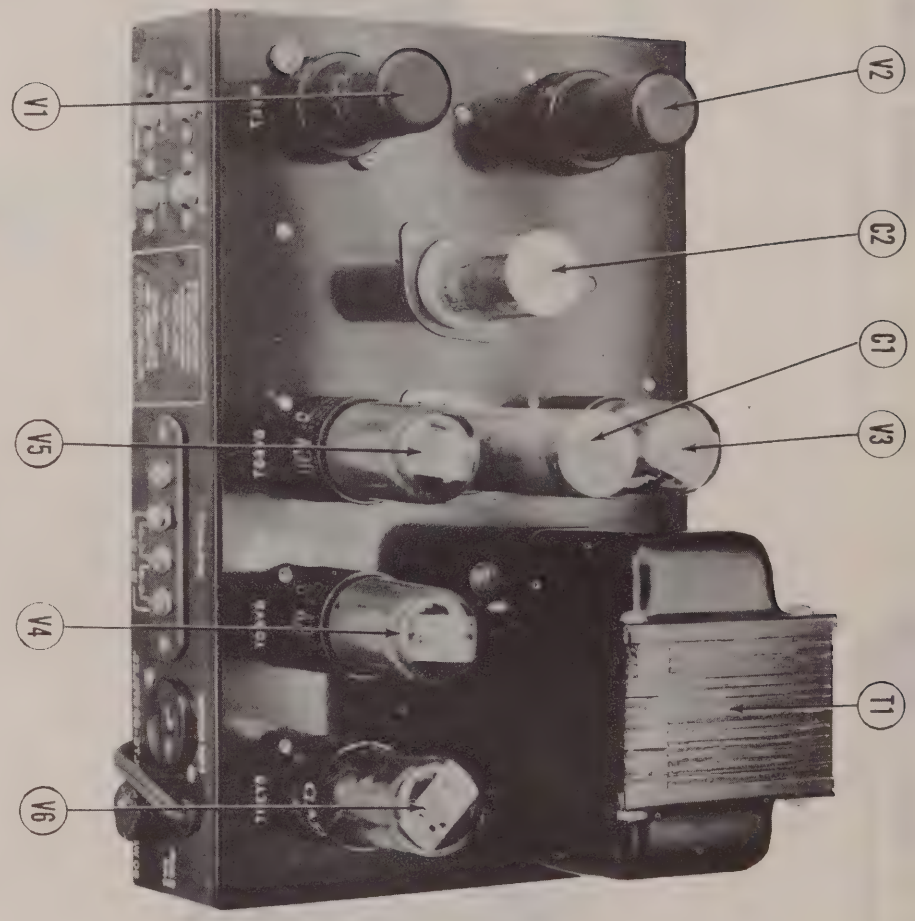
CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: B. SOUND PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	100KΩ	½		Q13-128	AM-51-Z	Volume control
B	Shaft			Not Req.	RS-3	Attach to R1A per instructions
R2A	1 Meg.	½		Q13-137	AM-63-Z	Bass control
B	Shaft			Not Req.	RS-3	Attach to R2A per instructions
R3A	1 Meg.	½		Q13-137	AM-63-Z	Treble control
B	Shaft			Not Req.	RS-3	Attach to R3A per instructions
C	Switch			76-1	SW-A	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: BELL SOUND PART No.	IRC PART No.	IDENTIFICATION CODES
R4	22KΩ	½		BTS-22K	Mic. 2 Shunt
R5	820KΩ	½		BTS-820K	Voltage Divider
R6	220KΩ	½		BTS-220K	Voltage Divider
R7	3 Meg.	½		BTS-3.3 Meg.	1st Mic. Amp. Grid
R8	3 Meg.	½		BTS-3.3 Meg.	2nd Mic. Amp. Grid
R9	100KΩ	½		BTS-100K	1st Mic. Amp. Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
R10	100KΩ	½		BTS-100K	2nd Mic. Amp. Plate Load
R11	270KΩ	½		BTS-270K	Audio Coupling
R12	270KΩ	½		BTS-270K	Audio Coupling
R13	10KΩ	½		BTS-10K	AF Grid
R14	82KΩ	½		BTS-82K	AF Grid Filter
R15	100KΩ	½		BTS-100K	AF Plate Load
R16	220KΩ	½		BTS-220K	Audio Coupling
R17	1 Meg.	½		BTS-1 Meg.	Audio Coupling
R18	270KΩ	½		BTS-270K	Audio Coupling
R19	270KΩ	½		BTS-270K	Audio Coupling
R20	2200Ω	½		BTS-2200	AF Cathode
R21	100KΩ	½		BTS-100K	Decoupling
R22	270KΩ	½		BTS-270K	AF Plate Load
R23	47KΩ	½		BTS-47K	Decoupling
R24	47KΩ	½		BTS-47K	Tone Compensation
R25	270KΩ	½		BTS-270K	Tone Compensation
R26	47Ω	½		BW-½-47	Feedback
R27	1000Ω	½		BTS-1000	AF Cathode
R28	1000Ω	½		BTS-1000	AF Cathode
R29	100KΩ	½		BTS-100K	AF Plate Load
R30	100KΩ	½		BTS-100K	Phase Inverter Plate Load
R31	7500Ω	½		BTS-8200	Phase Inverter Grid
R32	200KΩ	½		BTS-220K	Output Grid
R33	270KΩ	½		BTS-270K	Output Grid
R34	200Ω	5		AB-200	Output Cathode
R35	2700Ω	1		BTA-2700	Filter
R36	25KΩ	10		AB-25000	Bleeder
R37	2200Ω	½		BTS-2200	Feedback

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .67A	630VCT .103ADC	6.3VAC @ 1.8A		B-20166	P-4079 †	P-3152 †	PV-90 †

† Drill new mounting holes and add series resistor to reduce plate voltage.

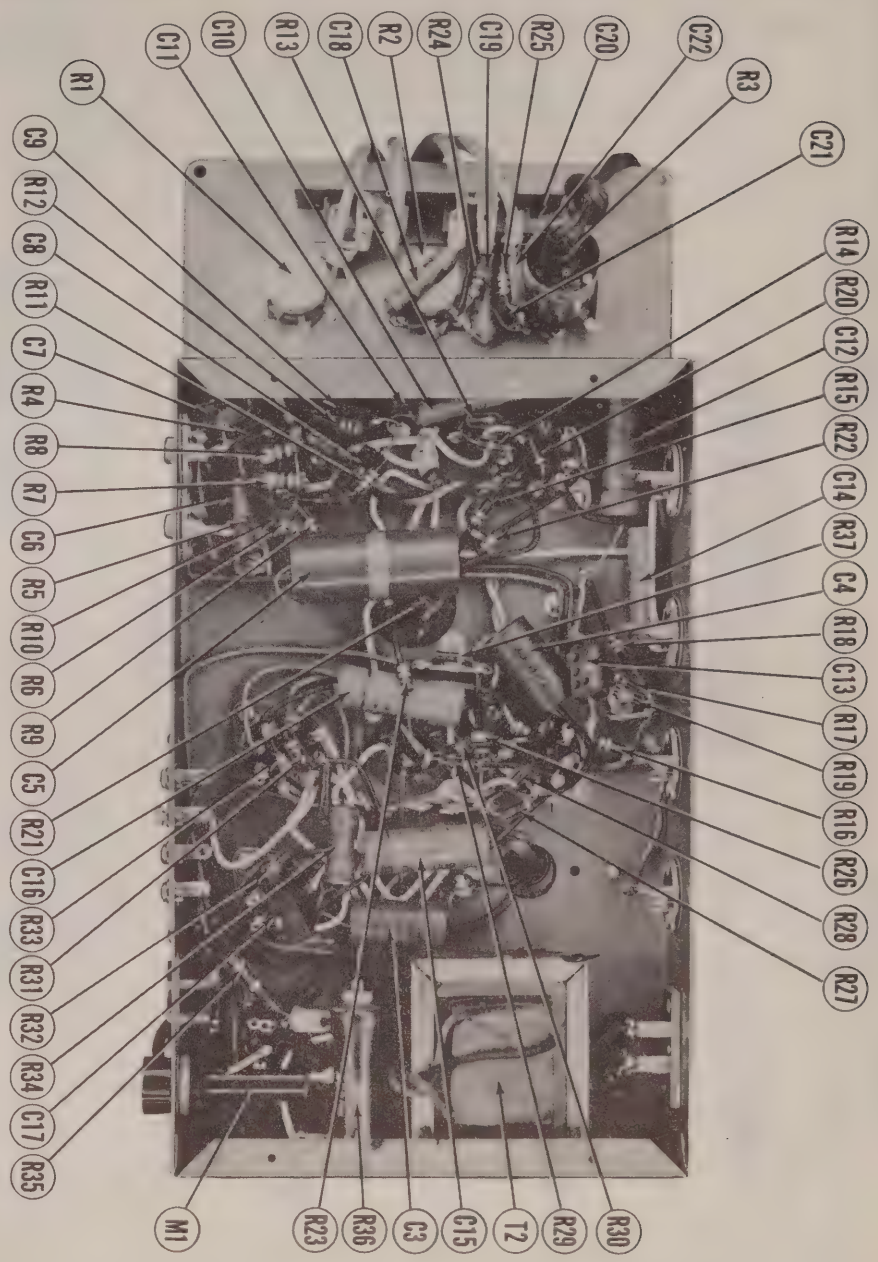
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	12KΩ CT	15-18Ω 6-8Ω 3.4-4Ω	420Ω CT	1.3Ω .75Ω .55Ω	B-20192			RO-304	

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M1	Fuse		2 Amp.

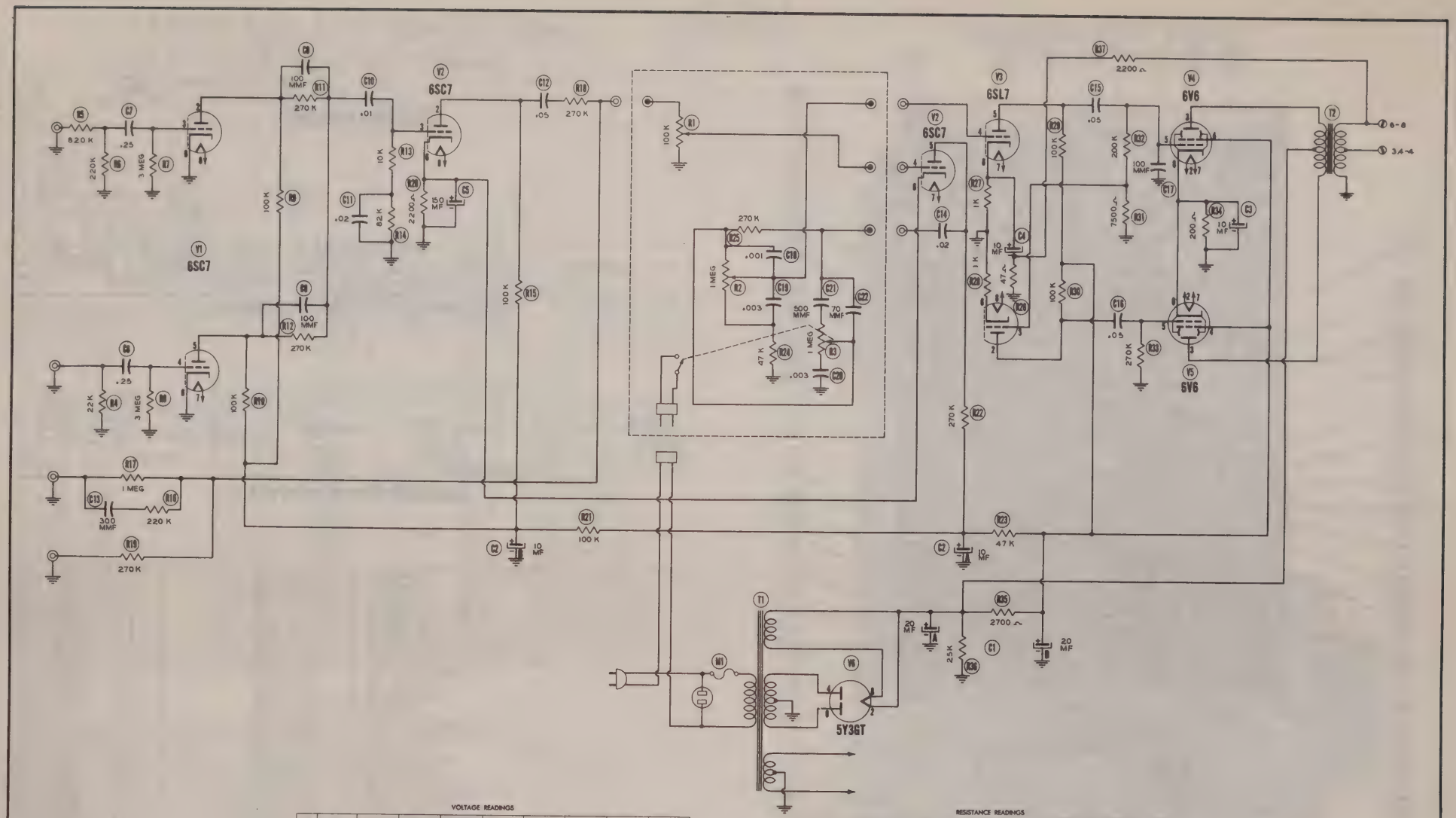
CHASSIS—BOTTOM VIEW



DATE 11/49 SET #76 FOLDER 7

BELL SOUND MODEL 2122R

BELL SOUND MODEL 2122R



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V	55VDC	-.7VDC	-.6VDC	55VDC	0V	∮3.2VAC	∮3.2VAC
V 2	6SC7	0V	80VDC	0V	0V	110VDC	1.5VDC	∮3.2VAC	∮3.2VAC
V 3	6SL7GT	0V	160VDC	1.5VDC	0V	160VDC	1.5VDC	∮3.2VAC	∮3.2VAC
V 4	6V6GT	0V	∮3.2VAC	310VDC	290VDC	0V	0V	∮3.2VAC	18.5VDC
V 5	6V6GT	0V	∮3.2VAC	310VDC	290VDC	0V	0V	∮3.2VAC	18.5VDC
V 6	5Y3GT	0V	315VDC	0V	320VAC	0V	320VAC	0V	315VDC

∮ 6.3VAC measured across filaments.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†250KΩ	3.3 Meg.	3.3 Meg.	†250KΩ	0Ω	.1Ω	.1Ω
V 2	6SC7	0Ω	†250KΩ	90KΩ	5Ω	†250KΩ	2.2KΩ	.1Ω	.1Ω
V 3	6SL7GT	7.5KΩ	†100KΩ	100Ω	47KΩ	†100KΩ	100Ω	.1Ω	.1Ω
V 4	6V6GT	0Ω	.1Ω	†200Ω	†2.7KΩ	200KΩ	7.5KΩ	.1Ω	200Ω
V 5	6V6GT	0Ω	.1Ω	†210Ω	†2.7KΩ	270KΩ	7.5KΩ	.1Ω	200Ω
V 6	5Y3GT	Inf.	25KΩ	Inf.	100Ω	Inf.	110Ω	Inf.	25KΩ

† Measured from pin 2 of V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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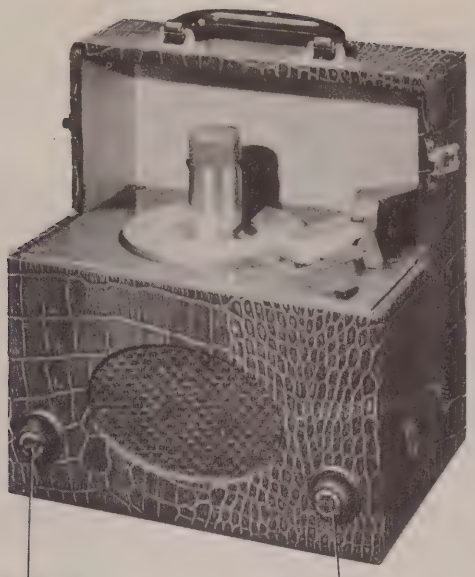
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

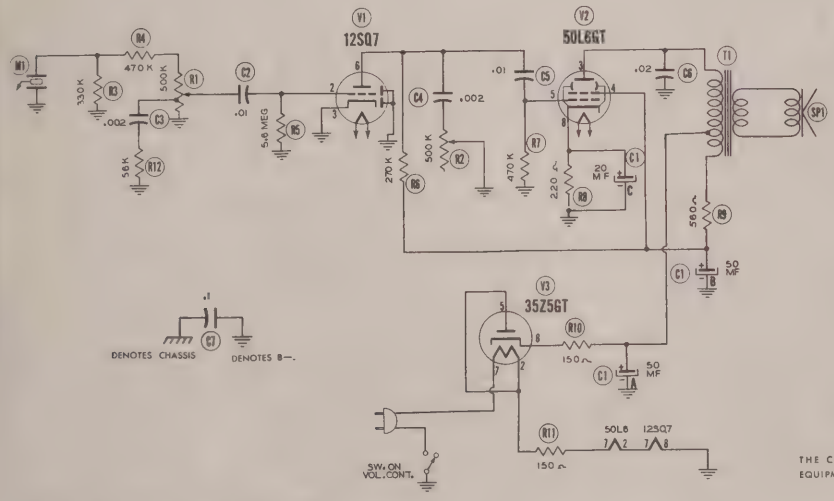


CRESCENT
MODEL H-16A1

CRESCENT MODEL H-16A1

TRADE NAME	Crescent, Model H-16A1
MANUFACTURER	Crescent Industries, Inc., 4140 West Belmont Ave., Chicago 41, Illinois
TYPE SET	AC Operated Automatic Record Player with 3 Tube Amplifier
TUBES (THREE)	Types 12SQ7 AF Amp., 50L6GT Power Output, 35Z5GT Rectifier

POWER SUPPLY 110-120 Volts AC RATING: .17 Amp. @ 117 Volts AC



Pin No.	12SQ7 Volt.	12SQ7 Res.	50L6GT Volt.	50L6GT Res.
1	0V	Inf.	65VDC	120Ω
2	-.2VDC	5.5 Meg.	11VAC	1Ω
3	0V	0Ω	55VDC	158Ω
4	0V	0Ω	65VDC	170Ω
5	0V	0Ω	0V	470KΩ
6	42VAC	1270KΩ	0V	1Ω
7	11VAC	1Ω	55VAC	67Ω
8	0V	0Ω	4.5VDC	220Ω

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	0V	Inf.
2	75VAC	220Ω
3	0V	Inf.
4	0V	Inf.
5	75VAC	220Ω
6	0V	Inf.
7	117VAC	260Ω
8	67VDC	60KΩ

† Measured from pin 8 of V3.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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76-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 11/49 SET #76 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CRESCENT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	10R1	12SQ7	8Q	
V2	Power Output	10R2	50L6GT	7AC	
V3	Rectifier	10R3	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CRESCENT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150						■ Filter
B	50	150	12R7					◓ Filter
C	20	25						▲ Output Cath. Bypass
C2	.01	400	12R4	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C3	.002	200	12R1	P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C4	.002	200	12R1	P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C5	.01	400	12R4	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C6	.02	400	12R5	P488-02	GT4S2		TM-12	Output Plate Bypass
C7	.1	400	12R6	P488-1	GT4P1		TM-1	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CRESCENT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	11R5	Q13-133X		Volume control, tapped @ 150KΩ
B	Switch		Not Req.	76-1		Attach to R1A Per Instructions
R2	500KΩ	½	11R4	Q13-133	15/16-60-Z	Tone control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CRESCENT PART No.	IRC PART No.	IDENTIFICATION CODES
R3	330KΩ	½	11R2-8	BTS-330K	Tone Compensation
R4	470KΩ	½	11R2-3	BTS-470K	Tone Compensation
R5	5.6 Meg.	½	11R2-1	BTS-5.6 Meg.	AF Grid
R6	270KΩ	½	11R2-2	BTS-270K	AF Plate
R7	470KΩ	½	11R2-3	BTS-470K	Output Grid
R8	220Ω	½	11R2-4	BW-½-220	Output Cathode
R9	560Ω	½	11R2-5	BW-½-560	Filter Wire Wound
R10	150Ω	½	11R2-6	BW-½-150	Filter
R11	150Ω	5	11R3-1	AB-150	Filament Dropping Wire Wound
R12	56KΩ	½	11R2-7	BTS-56K	Tone Compensation

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CRESCENT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2400Ω	3.3Ω	442Ω Tap @ 22Ω	.8Ω	25B17	A-3330	A-3031	RO-3	

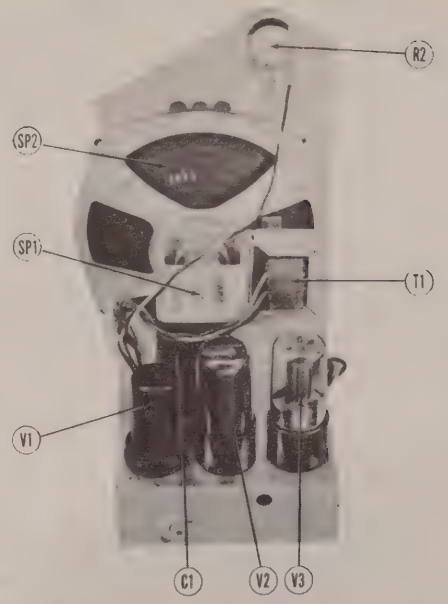
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: CRESCENT PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-803		
SP1	PM	3.3Ω	57TM6	MOD.P525-V	52A21 *	* Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	5 1/8"	9/16"				

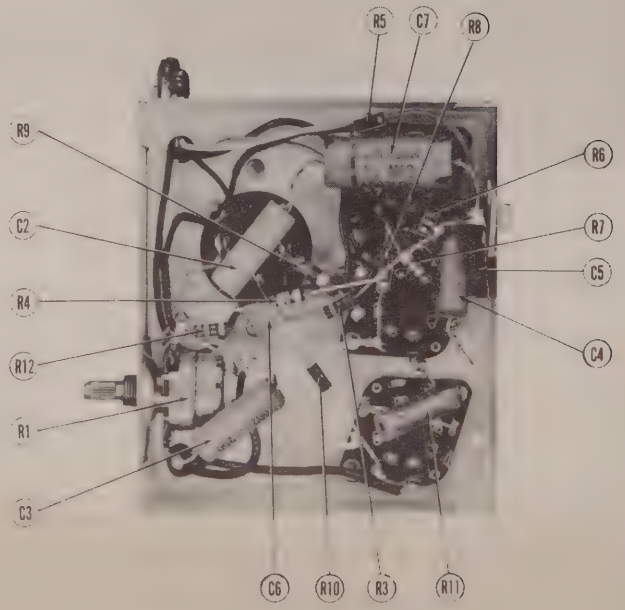
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: CRESCENT PART No.	ASTATIC PART No.	REMARKS
M1	8R4-1		

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



DAVID BOGEN
MODEL EX-326

DAVID BOGEN
MODEL EX-326

DAVID BOGEN MODEL EX-326

TRADE NAME	David Bogen, Model EX-326
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, New York
TYPE SET	AC or Battery Operated 3 Channel Mobile Audio Amplifier
TUBES(EIGHT)	Types 6SF5 Mic. 1 Pre Amp., 6SF5 Mic. 2 Pre Amp., 6SL7GT 1st AF Amp., 6SF5 2nd AF Amp., 6SL7GT Driver-Phase Inverter, (2) 6L6G Power Output, 5U4G or 5X4 Rectifier
POWER SUPPLY	110-120 Volts AC or 6 Volt Storage Battery
RATING:	1.7 Amp. @ 117 Volts AC or 12.2 Amp. @ 6 Volts DC

OUTPUT

SPEAKERS MAY BE CONNECTED BY MEANS OF PLUGS TO THE SPEAKER SOCKETS, OR THEY CAN BE CONNECTED DIRECTLY TO THE SPEAKER OUTPUT TERMINAL STRIP. VARIABLE IMPEDENCES FOR SPEAKER MATCHING ARE PROVIDED AT THE SPEAKER OUTPUT TERMINAL STRIP AND ALSO AT THE 2 SPEAKER SOCKETS. THE PIGTAIL LEAD WITH SPADE LUG VARIES THE IMPEDENCE AT THE SPEAKER SOCKETS BY CONNECTING THE SPADE LUG UNDER THE TERMINAL ON THE STRIP WHICH PROVIDES THE NEAREST IMPEDENCE DESIRED. BOTH SPEAKER SOCKETS AND TERMINAL STRIP MAY BE USED SIMULTANEOUSLY BUT THE PIGTAIL SPADE LUG MUST BE CONNECTED TO THE TERMINAL ON THE STRIP IN ORDER TO OPERATE FROM THE SPEAKER SOCKETS. CONNECTING THE PIGTAIL SPADE LUG WILL NOT INTERFERE WITH THE USE OF THE TERMINAL STRIP FOR CONNECTING SPEAKERS. WHEN OPERATING SPEAKERS ON VOICE COIL IMPEDENCE USE AS HEAVY WIRE AS POSSIBLE.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic.1 AF Amp.	6SF5	6SF5	6AB	
V2	Mic.2 AF Amp.	6SF5	6SF5	6AB	
V3	1st AF Amp.	6SL7GT	6SL7GT	8BD	
V4	2nd AF Amp.	6SF5	6SF5	6AB	
V5	Driver-Phase Inv.	6SL7GT	6SL7GT	8BD	
V6	Power Output	6L6G	6L6G	7AC	
V7	Power Output	6L6G	6L6G	7AC	
V8A	Rectifier	5U4G	5U4G	5T	
B	Rectifier	5X4G	5X4G	5Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

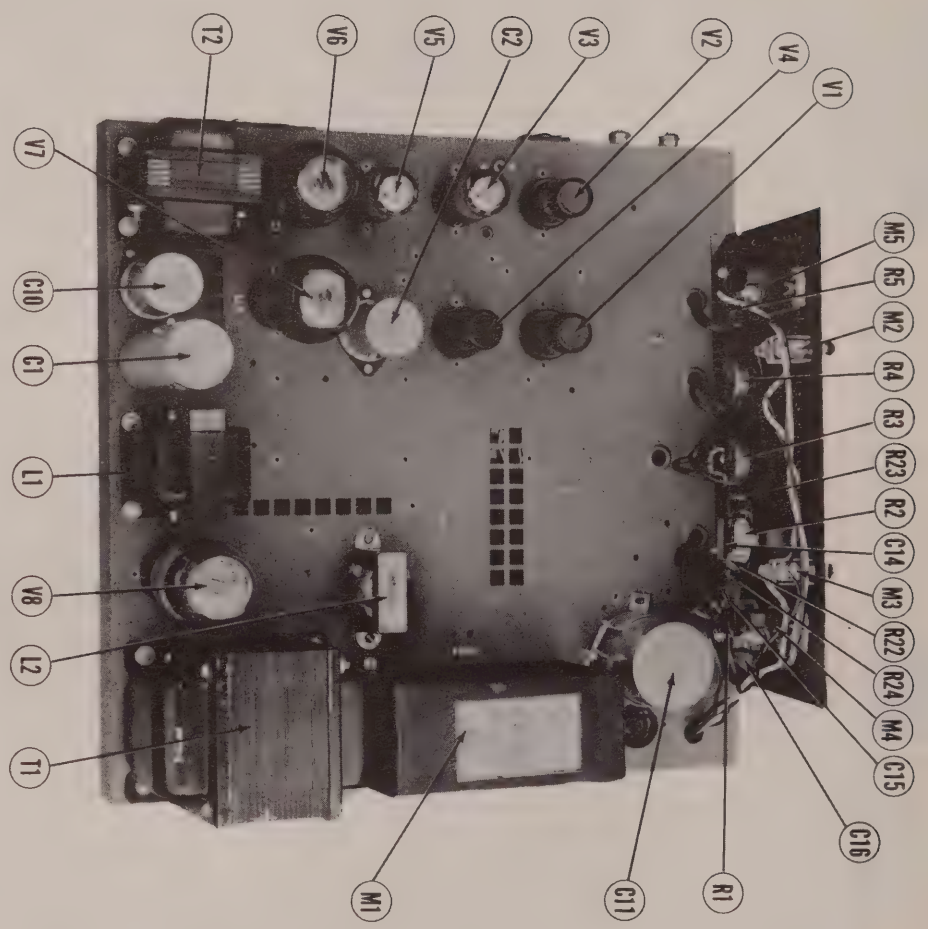
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	8	500		PRVC475/8-8	EB10018		CL-88	Filter Red-Black
B	8	500						Filter Blue-Yellow
C2A	10	450		AF22J	UP1145		EL-210	▲ Mic. 1 AF Dec.
B	10	450						◓ Mic. 2 AF Dec.
C3	50	50		PRS50/50	BR505		TVA-16	Mic. 1 AF Cath. Byp.-Note
C4	50	50		PRS50/50	BR505		TVA-16	Mic. 2 AF Cath. Byp.-Note
C5	50	50		PRS50/50	BR505		TVA-16	1st AF Amp. Cath. Byp.
C6	50	50		PRS50/50	BR505		TVA-16	2nd AF Amp. Cath. Byp.
C7	50	50		PRS50/50	BR505		TVA-16	Output Cath. Bypass
C8	50	50		PRS50/50	BR505		TVA-16	Hash Filter
C9	8	450		PRS450/8	BR845		UT-8	Decoupling
C10A	10	450		AF22J	UP1145		EL-210	▲ Filter
B	10	450						■ 2nd AF Amp. Dec.
C11	3.5	330AC		SRFR330-3.5	KZ3035R		19P55	Motor Buffer
C12	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C13	.1	400		P488-1	GT4P1		TM-1	Audio Coupling
C14	500	500		1468-0005	5W5T5	GP2K-500	1FM-35	Tone Compensation
C15	.003	600		P688-003	GT6D3	GP2M-003	TM-23	Tone Compensation
C16	.03	400		P488-03	GT4S3		TM-13	Tone Compensation
C17	.1	400		P488-1	GT4P1		TM-1	Audio Coupling
C18	.006	600		P688-006	GT6D6	GP2M-0056	TM-26	AF Feedback
C19	.1	400		P488-1	GT4P1		TM-1	Audio Coupling
C20	.1	400		P488-1	GT4P1		TM-1	Audio Coupling
C21	.04	2400						Buffer
C22	.1	400		P488-1	GT4P1		TM-1	Line Filter
C23	.05	400		P488-05	GT4S5		TM-15	Audio Coupling

Note. Some models use 100MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: D. BOGEN PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2 Meg.	½	V-137CE			Bass control (Dual Control)
B	2.5 Meg.	½				Bass control
R2	1.5 Meg.	½	V-136C			Treble control, tapped @ 750KΩ
R3	500KΩ	½	V-202A	Q13-133	M-60-Z	Phono volume control
R4	500KΩ	½	V-202A	Q13-133	M-60-Z	Microphone 2 volume control
R5	500KΩ	½	V-202A	Q13-133	M-60-Z	Microphone 2 volume control

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DAVID BOGEN PART No.	IRC PART No.	
R6	500KΩ	½		BTS-470K	Mic. 1 AF Grid
R7	3300Ω	½		BTS-3300	Mic. 1 AF Cathode
R8	270KΩ	½		BTS-270K	Mic. 1 AF Plate
R9	500KΩ	½		BTS-470K	Mic. 2 AF Grid
R10	3300Ω	½		BTS-3300	Mic. 2 AF Cathode
R11	270KΩ	½		BTS-270K	Mic. 2 AF Plate
R12	47KΩ	½		BTS-47K	Filter
R13	47KΩ	½		BTS-47K	Filter
R14	270KΩ	½		BTS-270K	1st AF Grid
R15	270KΩ	½		BTS-270K	1st AF Grid
R16	3300Ω	½		BTS-3300	1st AF Cathode
R17	100KΩ	½		BTS-100K	1st AF Plate
R18	3300Ω	½		BTS-3300	1st AF Cathode
R19	47KΩ	½		BTS-47K	1st AF Plate
R20	47KΩ	½		BTS-47K	Filter
R21	500KΩ	½		BTS-470K	Tone Compensation
R22	100KΩ	½		BTS-100K	Tone Compensation
R23	47KΩ	½		BTS-47K	Tone Compensation
R24	15KΩ	½		BTS-15K	Tone Compensation
R25	1000Ω 5%	½		BTS-1000-5%	2nd AF Cathode
R26	100KΩ	½		BTS-100K	2nd AF Plate
R27	150KΩ	½		BTS-150K	Filter
R28	270KΩ	½		BTS-270K	Driver Grid
R29	4700Ω	½		BTS-4700	Driver Grid
R30	1000Ω 5%	½		BTS-1000-5%	Driver Cathode
R31	100KΩ	½		BTS-100K	Driver Plate
R32	3300Ω	½		BTS-3300	Phase Inv. Grid
R33	100KΩ	½		BTS-100K	Phase Inv. Plate
R34	100KΩ	½		BTS-100K	Output Grid
R35	270KΩ	½		BTS-270K	Feedback
R36	100KΩ	½		BTS-100K	Output Grid
R37	200Ω	20		DG-200	Output Cathode-Wire Wound
R38A	2220	50		DG-2250	Filter-Wire Wound
B	20KΩ	50		EP-20K	Bleeder-Wire Wound
R39	2200Ω	½		BTS-2200	Hum Balance
R41	2200Ω	½		BTS-2200	Hum Balance
R42	10Ω	½		BW-½-10	Hash Suppression

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.7A or 6VDC @ 12.2A	740VCT .140ADC	5VAC @ 3A	6.3VAC @ 3.8A	T-322F		P-3176	

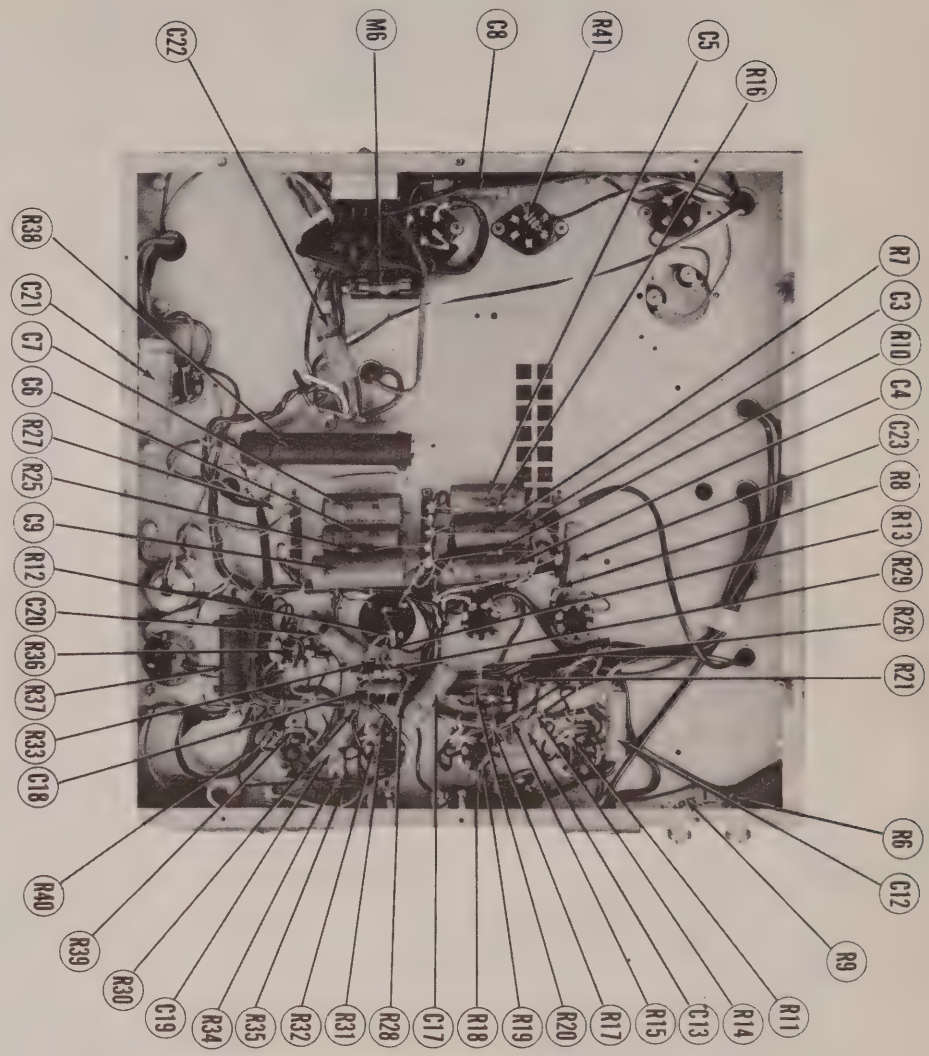
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8.5KΩ CT	500Ω 250Ω 15Ω 8Ω 4Ω	320Ω CT	29Ω 21Ω 1.7Ω 1.2Ω .9Ω	T-234G	A-3304	A-3130		

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.140A	98Ω	3.3Henries	T-401C	C-1410 †	C-3196 †	R-7150 †	† Drill new mounting holes.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CHOKE (HASH SUPPRESSOR)

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L2		.12		T-504G				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				D. BOGEN PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6V	60~	H504			

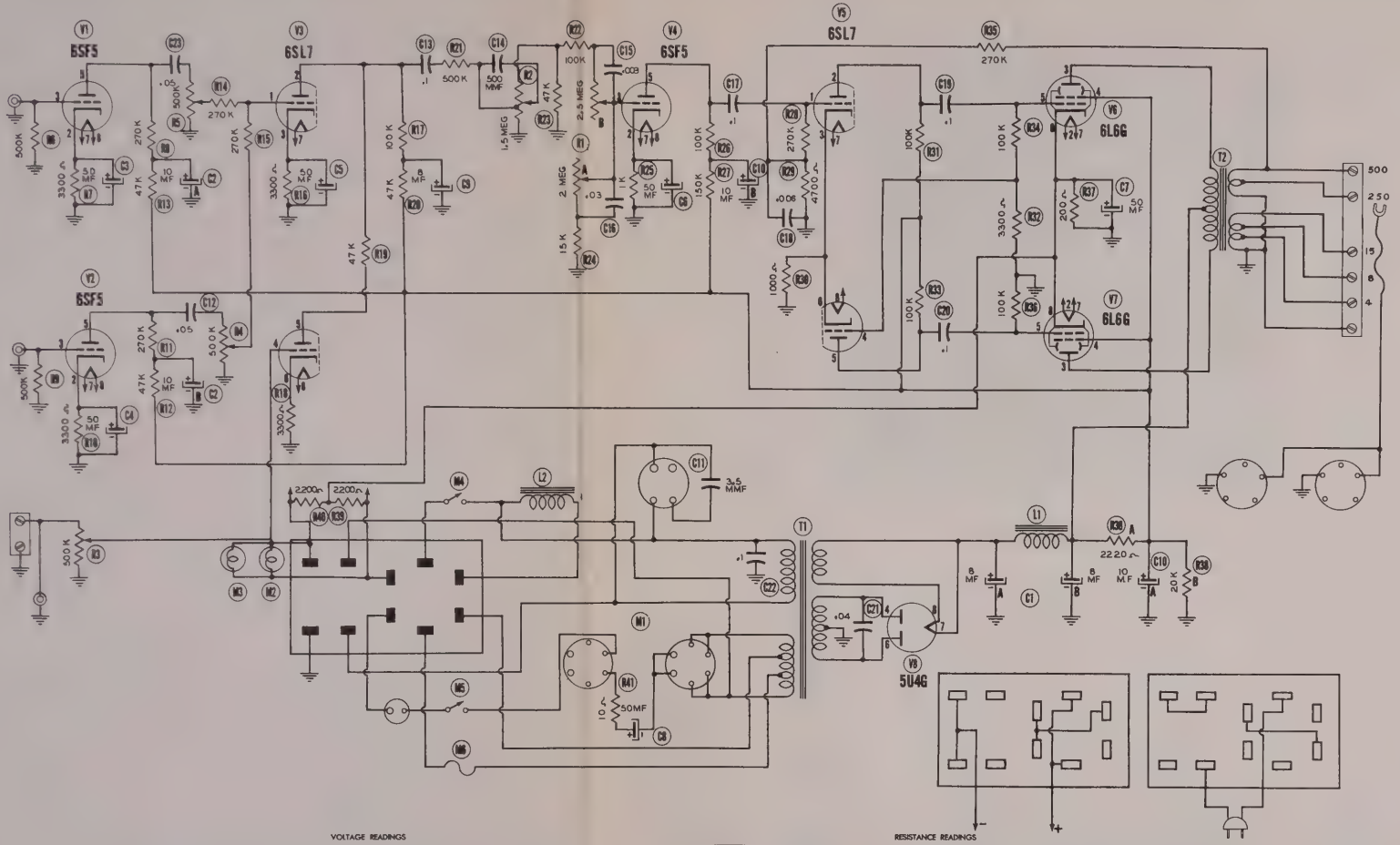
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					DAVID BOGEN PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47
M3	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
M4	Switch		Power
M5	Switch		Standby
M6	Fuse		30 Amp. 25 Volt

DATE 11/49 SET #76 FOLDER #9



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0V	1.7VDC	.3VDC	0V	160VDC	0V	♯24VAC	♯24VAC
V 2	6SF5	0V	1.6VDC	.3VDC	0V	170VDC	0V	♯24VAC	♯24VAC
V 3	6SL7GT	0V	160VDC	2VDC	0V	135VDC	1.6VDC	♯24VAC	♯24VAC
V 4	6SF5	0V	.6VDC	0V	0V	125VDC	0V	♯24VAC	♯24VAC
V 5	6SL7GT	0V	220VDC	2.5VDC	0V	225VDC	2.5VDC	♯24VAC	♯24VAC
V 6	6L6G	0V	♯24VAC	390VDC	330VDC	.2VDC	0V	♯24VAC	22VDC
V 7	6L6G	0V	♯24VAC	390VDC	330VDC	.2VDC	0V	♯24VAC	22VDC
V 8	5U4G	0V	410VDC	380VAC	380VAC	380VAC	380VAC	410VDC	410VDC

† Measured from pin 2 of V8.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0Ω	3KΩ	150KΩ	Inf.	†320KΩ	Inf.	1200Ω	1200Ω
V 2	6SF5	0Ω	3KΩ	150KΩ	Inf.	†300KΩ	Inf.	1200Ω	1200Ω
V 3	6SL7GT	400KΩ	†150KΩ	3KΩ	600KΩ	†200KΩ	3KΩ	1200Ω	1200Ω
V 4	6SF5	0Ω	1000Ω	125KΩ	Inf.	†200KΩ	Inf.	1200Ω	1200Ω
V 5	6SL7GT	280KΩ	†100KΩ	1000Ω	330Ω	†100KΩ	1000Ω	1200Ω	1200Ω
V 6	6L6G	0Ω	1200Ω	†230Ω	†2200Ω	100KΩ	Inf.	1200Ω	200Ω
V 7	6L6G	0Ω	1200Ω	†250Ω	†2200Ω	100KΩ	Inf.	1200Ω	200Ω
V 8	5U4G	Inf.	22KΩ	100Ω	100Ω	100Ω	100Ω	22KΩ	22KΩ

♯ 6.3VAC measured between pins of socket.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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DAVID BOGEN
MODELS 11U, 21U

DAVID BOGEN
MODELS 11U, 21U

TRADE NAME	David Bogen, Models 11U, 21U
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, New York
TYPE SET	AC-DC Operated Intercommunication System
TUBES(TWO)	Types 14F7 AF Amp., 50L6GT Power Output
POWER SUPPLY	110-120 Volts AC RATING: .24 Amp. @ 117 Volts AC

SINGLE MASTER SYSTEM

In this system any number of remote stations up to 10 for the model 11U and 20 for the model 21U may be used. Connections should be made through a junction box. (One for the 11U and two for the 21U). Use one twisted unshielded pair of wires to each remote when break-in is not used. Use two twisted unshielded pairs to each remote when break-in is used. The calling pair from remote No. 1 is connected to pair 1, remote No. 2 is connected to pair 2 etc., up to number of remotes used. All break-in pairs from the remotes are connected to "BR" pair of the master.

MULTIPLE MASTER SYSTEM

In this system any number of masters up to 11 of model 11U and 21 for model 21U may be used. It is necessary to modify the master station to operate this system as follows: With the under part of selector switch visible and the talk-listen switch farthest away, cut the "On Bus" wires between the last pair and the next to last pair of contacts on the right end of selector switch (See Schematic). Pair "BM" of station 1 connects to pair 1 of all other stations; Pair "BM" of station 2 connects to pair 1 of station 1 and pair 2 of all other staions; Pair "BM" of station 3 connects to pair 2 of stations 1 and 2 and to pair 3 of all other stations. Note that "BM" pair of any station connedts to pair number corresponding to station number on all stations following and preceeding pair number on all lower station numbers. (Example: "BM" pair of station 6 connects to pair 5 on stations 1,2,3,4, and 5 and to pair 6 on all other stations.)

MULTIPLE MASTER-MULTIPLE REMOTE SYSTEM

Connect as described above, connecting the master stations first to pairs starting with one and up to number of masters used. Remotes are then connected to pair numbers following on each master station. Each master station must be modified by cutting the "On-Bus" wires between last position used for connecting masters and first position used for remotes.

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DATE 11/49 SET #76 FOLDER 10

PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL 11U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	14F7	14F7	8AC	
V2	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		AF844D	UP43215		EL-224	■ Filter
B	30	150						▲ Filter
C	10	150						Filter
C2	10	25		PRS25/10	BR102A		TVA-5	Output Cath. Bypass
C3	.25	400		P488-25	GT4P25		TC-2	Bias Filter
C4	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Audio Coupling
C5	.002	600		P688-002	GT6D2	GP2M-002	TM-22	Audio Coupling See Note
C6	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	AF Feedback
C7	.1	400		P488-1	GT4P1		TM-1	Line Filter
C8	.1	400		P488-1	GT4P1		TM-1	Transformer Isolation

Note: Some models use .003MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: D. BOGEN PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	300Ω	2	V-278		43S-300*	Volume control and switch (Wire Wound)
R2	200Ω	2	V-273	W-200	43-200	Volume control (Wire Wound) #

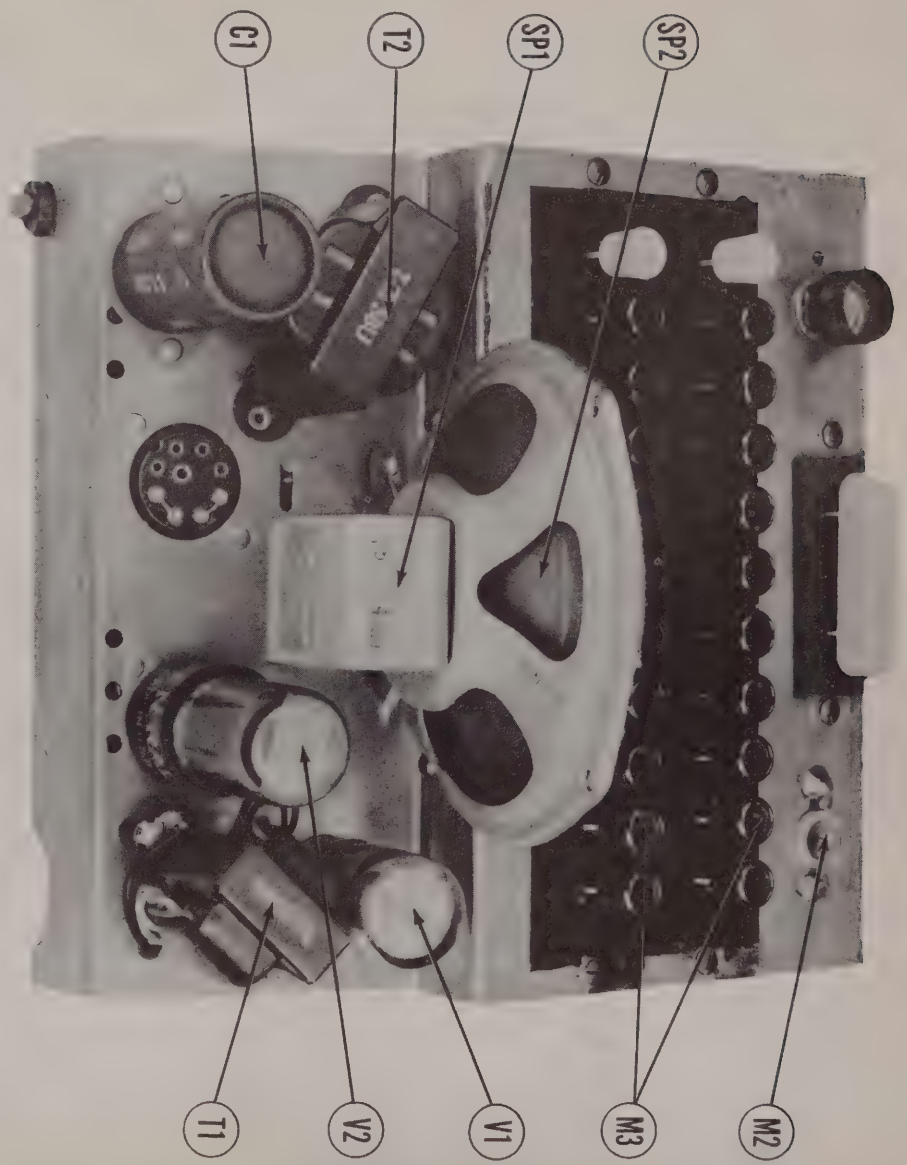
* Switch attached at factory.
# Used on remote station.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R3	100KΩ	½		BTS-100K	AF Grid
R4	2.2 Meg.	½		BTS-2.2 Meg.	AF Grid
R5	100KΩ	½		BTS-100K	AF Plate
R6	470KΩ	½		BTS-470K	AF Grid
R7	3300Ω	½		BTS-3300	AF Cathode
R8	100KΩ	½		BTS-100K	AF Plate
R9	2.2 Meg.	½		BTS-2.2 Meg.	Feedback
R10	47KΩ	½		BTS-47K	Tone Compensation
R11	220KΩ	½		BTS-220K	Output Grid
R12	150Ω	1		BW-1-150	Output Cathode (Wire Wound)
R13	3300Ω	½		BTS-3300	Filter
R14	220Ω	1		BW-1-220	Filter (Wire Wound)
R15	68Ω	2			Surge Limiter (Wire Wound)
R16	370Ω	10			Line Dropping (Wire Wound)
R17	47KΩ	½		BTS-47K	Series Neon
R18	47KΩ	½		BTS-47K	Series Neon
R19	100Ω	½		BW-1-100	Input Transformer Shunt (Wire Wound)
R20	100Ω	½		BW-1-100	Input Transformer Shunt (Wire Wound)
R21	100Ω	½		BW-1-100	Input Transformer Shunt (Wire Wound)
R22	100Ω	½		BW-1-100	Series Volume Control (Wire Wound)
R23	47Ω	½		BW-1-47	Output Transformer Shunt (Wire Wound)
R24	470Ω	½		BTS-470	Tone Compensation
R25	10Ω	½		BW-1-10	Voice Coil Shunt #

Used in remote station.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INPUT)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO	DC RES.		DAVID BOGEN	STANCOR	MERIT	CHICAGO	
	PRI. TO SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	1 to 25	2.9Ω	620Ω		A-4744			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DAVID BOGEN	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T2	5KΩ	47Ω CT	106Ω	4.7Ω CT	T275BU				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DAVID BOGEN	JENSEN	QUAM	
	FIELD	V. C. IMP.	PART No.	PART No.	PART No.	
SP1	PM	47Ω		ST-740 MOD.P5-X		
SP2	PM	47Ω		ST-740 MOD.P5-X		
	CONE DIA.	V. C. DIA.				
SP3	4 1/2"	9/16"				
SP4	4 1/2"	9/16"				

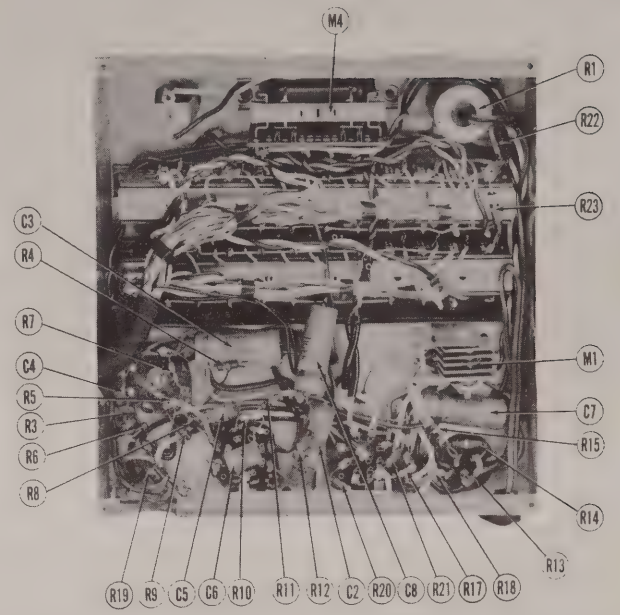
SELENIUM RECTIFIER

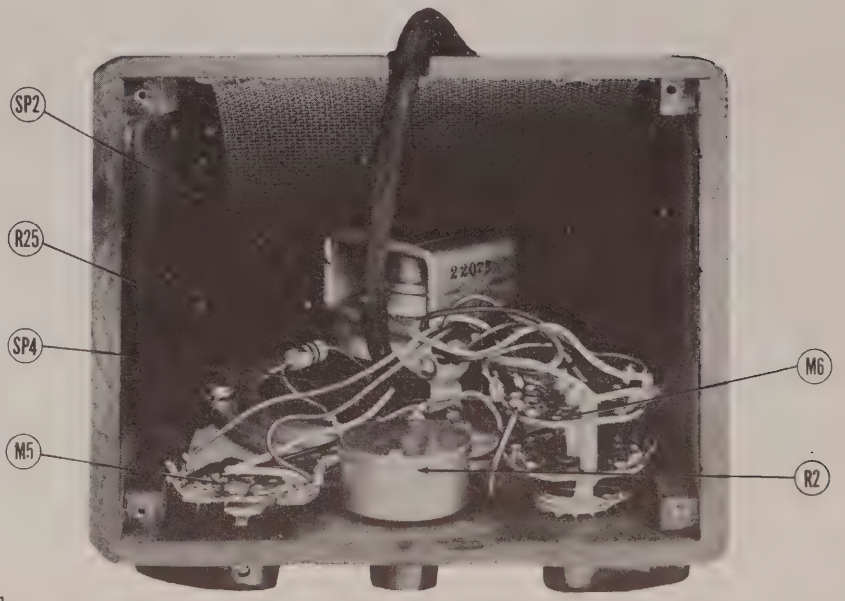
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	DAVID BOGEN PART No.	SYLVANIA PART No.		
M1	.054A		NB-5		

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
M2	Neon Lamp		NE51
M3A	Switch		Pushbutton
B	Switch		Pushbutton
M4	Switch		Talk-Listen
M5	Switch		Talk-Listen (Remote)
M6	Switch		Selector (Remote)

CHASSIS—BOTTOM VIEW

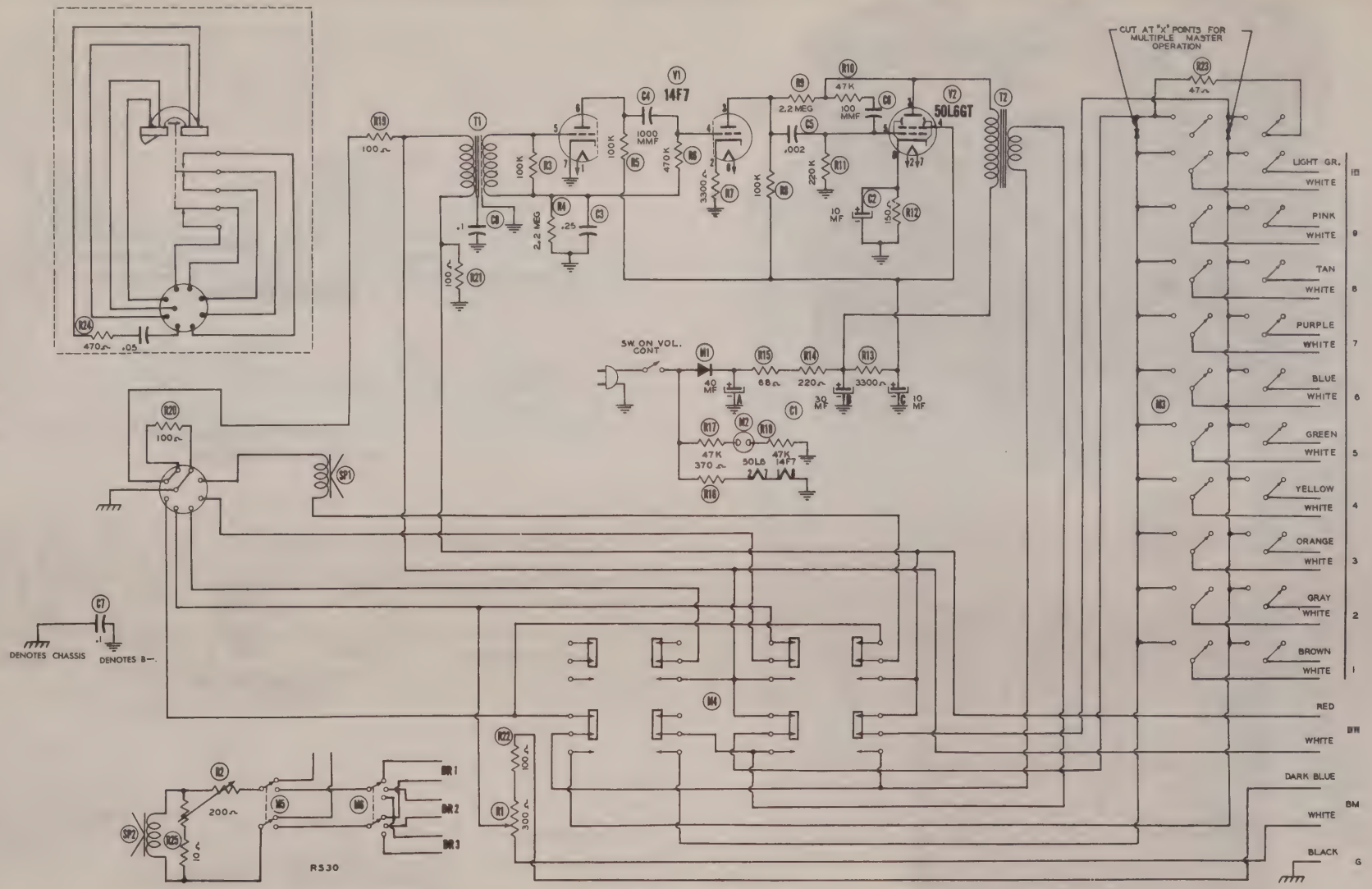




DATE 11/49 SET #76 FOLDER 10

DAVID BOGEN MODEL 111U

DAVID BOGEN MODEL 111U



TALK-LISTEN SWITCH IN LISTEN POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14F7	12VAC	.6VDC	95VDC	-.2VDC	-.5VDC	67VDC	0V	0V
V 2	50L6GT	0V	63VAC	117VDC	110VDC	0V	0V	12VAC	6.6VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14F7	14Ω	3.3KΩ	†100KΩ	2.7Meg.	2.3Meg.	†100KΩ	0Ω	0Ω
V 2	50L6GT	Inf.	65Ω	†400Ω	13.5KΩ	220KΩ	260KΩ	14Ω	15Ω

†MEASURED FROM OUTPUT OF M1

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76-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

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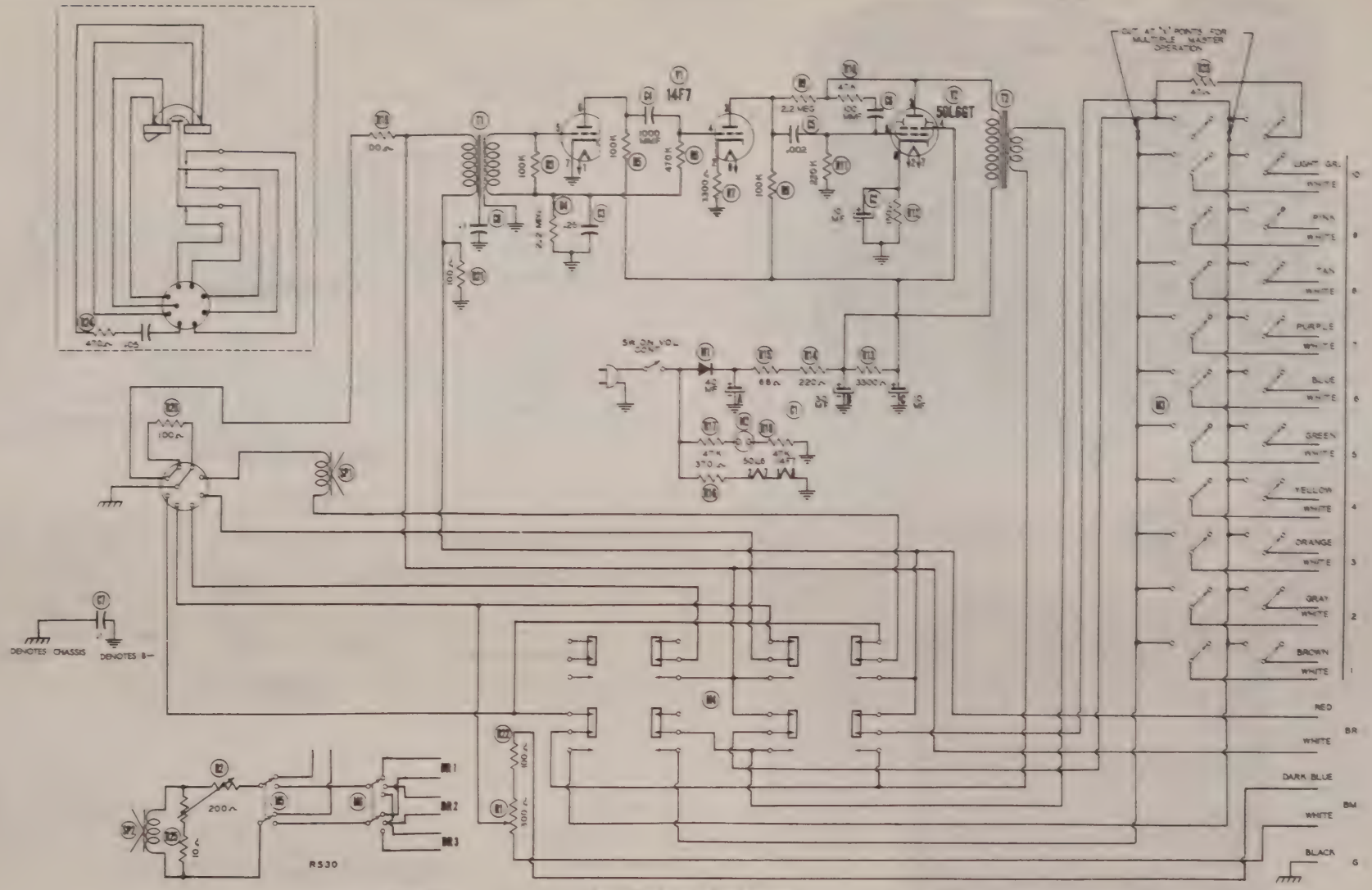

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14F7	120VAC	.5VDC	85VDC	−1.5VDC	−1.5VDC	57VDC	0V	0V
V 2	50L6GT	0V	85VAC	117VDC	117VDC	0V	0V	120VAC	6.3VDC

TALK-LISTEN SWITCH IN LISTEN POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	14F7	24Ω	3.5KΩ	110KΩ	0.7MEG.	0.8MEG.	110KΩ	3Ω	3Ω
V 2	50L6GT	1MΩ.	65Ω	1KΩ	13.6Ω	13.6Ω	265Ω	24Ω	265Ω

*MEASURED FROM OUTPUT OF VC

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76-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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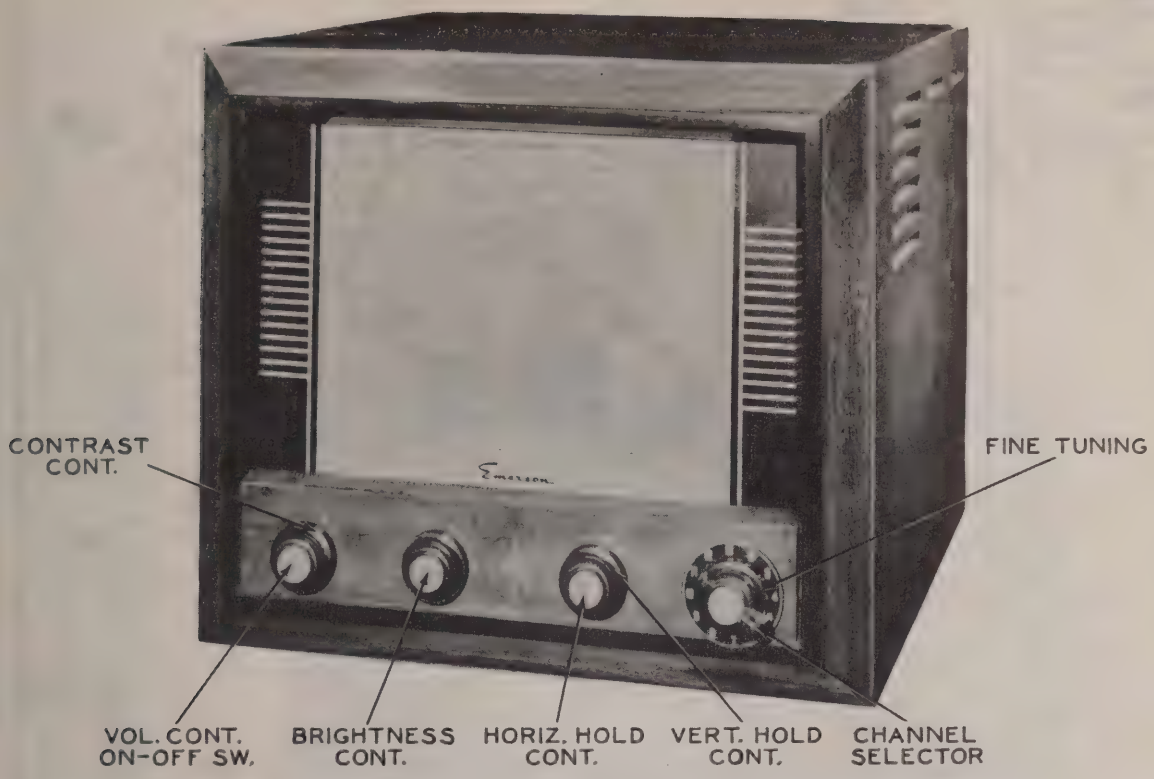
Date 11/49 Set No. 76—Folder No. 11

EMERSON
MODELS 571, 606, 611, 612, 619, 620, 624, 627



EMERSON
MODELS 571, 606, 611, 612, 619, 620, 624, 627

TRADE NAME	Emerson Models 571 and 606 (Ch. 120086B), 606, 611, 612 and 624 (Ch. 120087B-D), 619 (Ch. 120092D), 620 (Ch. 120091D), 620 (Ch. 120091QD), 627 (Ch. 120107B).
MANUFACTURER	Emerson Radio and Phono Corp., 111 Eighth Ave., New York 11, New York
TYPE SET	Television Receiver
TUBES	Twenty Eight (Models using 25Z6 Rectifiers) Twenty Three (Models using Selenium Rectifiers)
POWER SUPPLY	105-125 Volts AC 60 Cycle
FREQ. RANGE	Channels 2 thru 13 RATING: 1.66 Amp. @ 117 Volts AC (Selenium Rect. Models).

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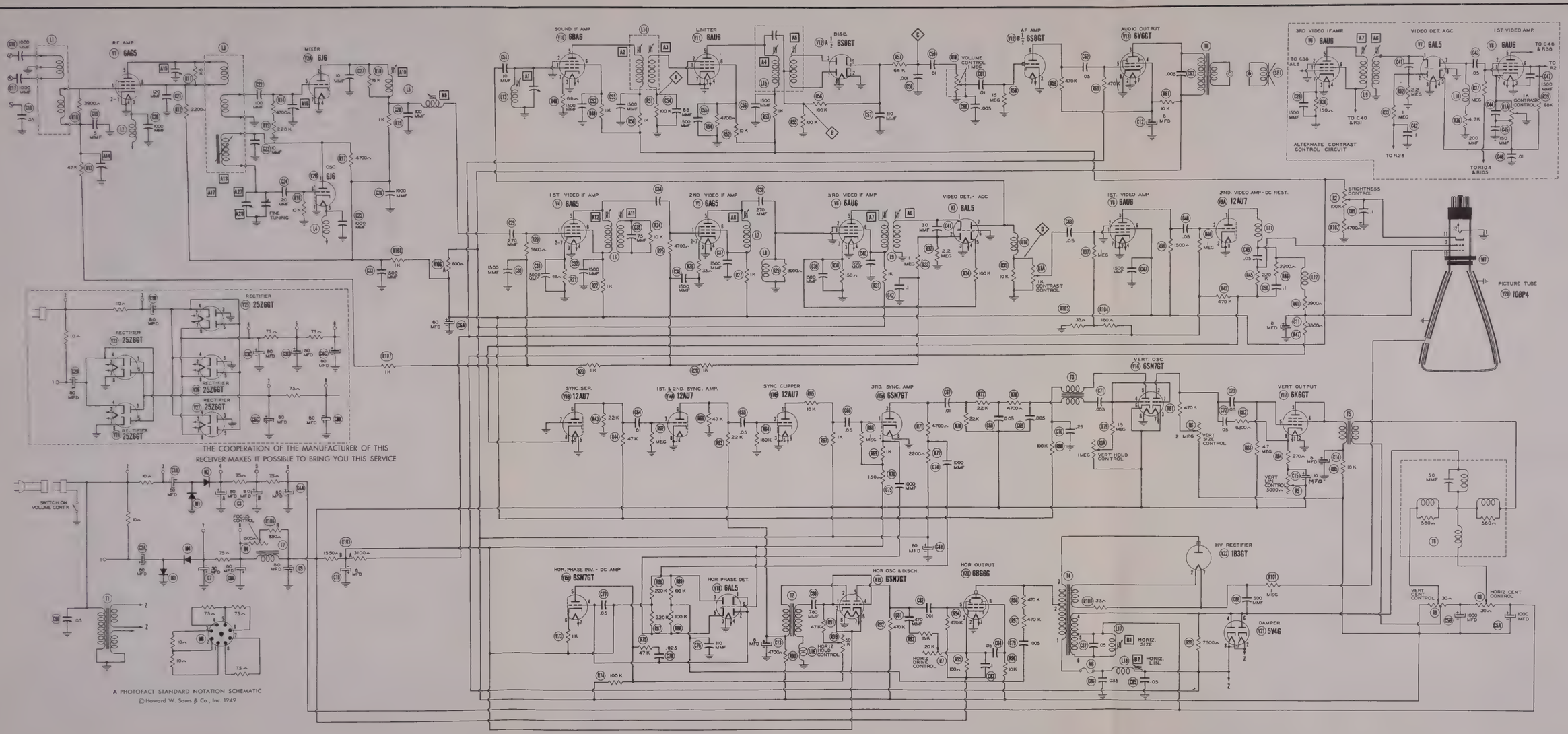
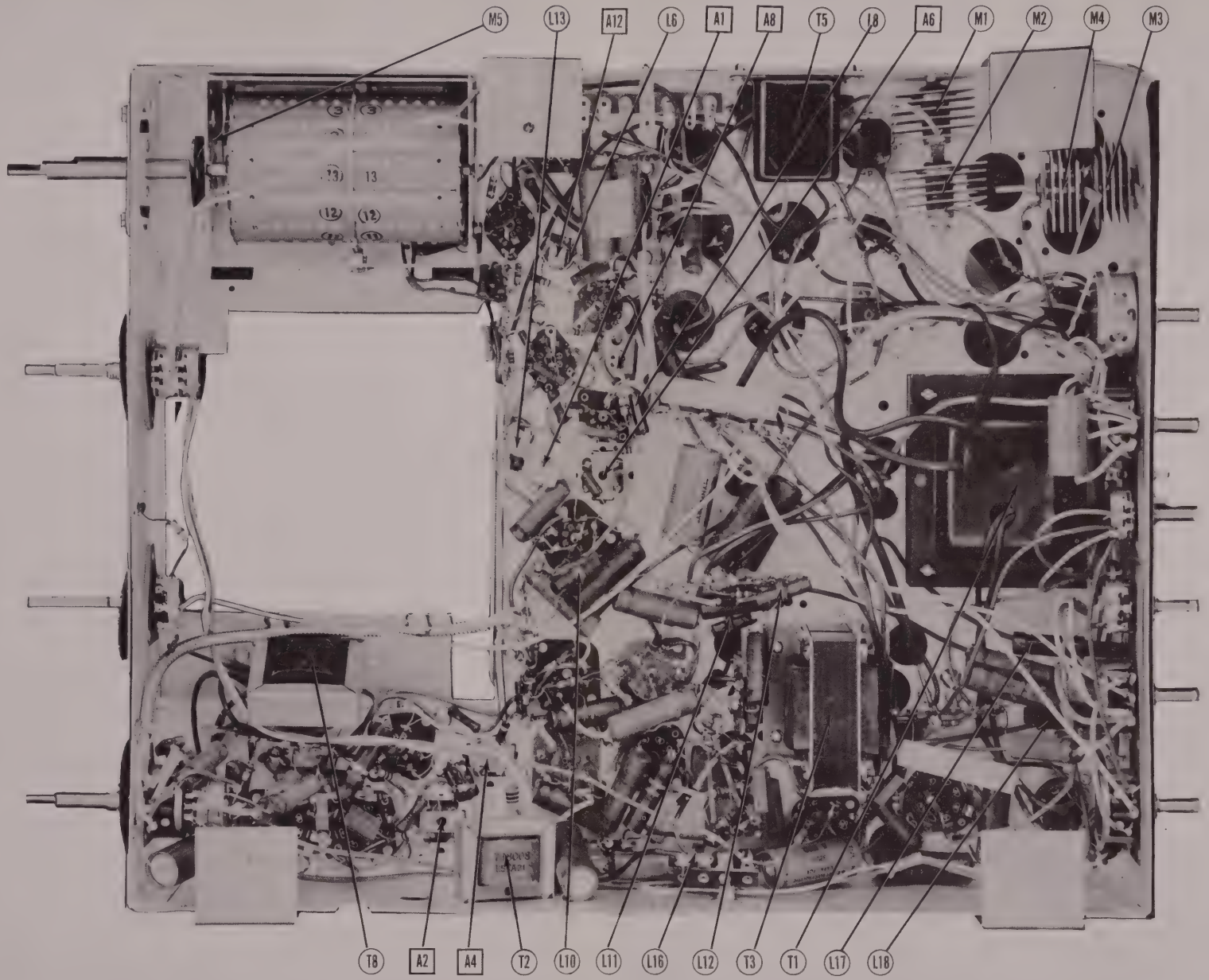
DATE 11/49 SET #76 FOLDER #11

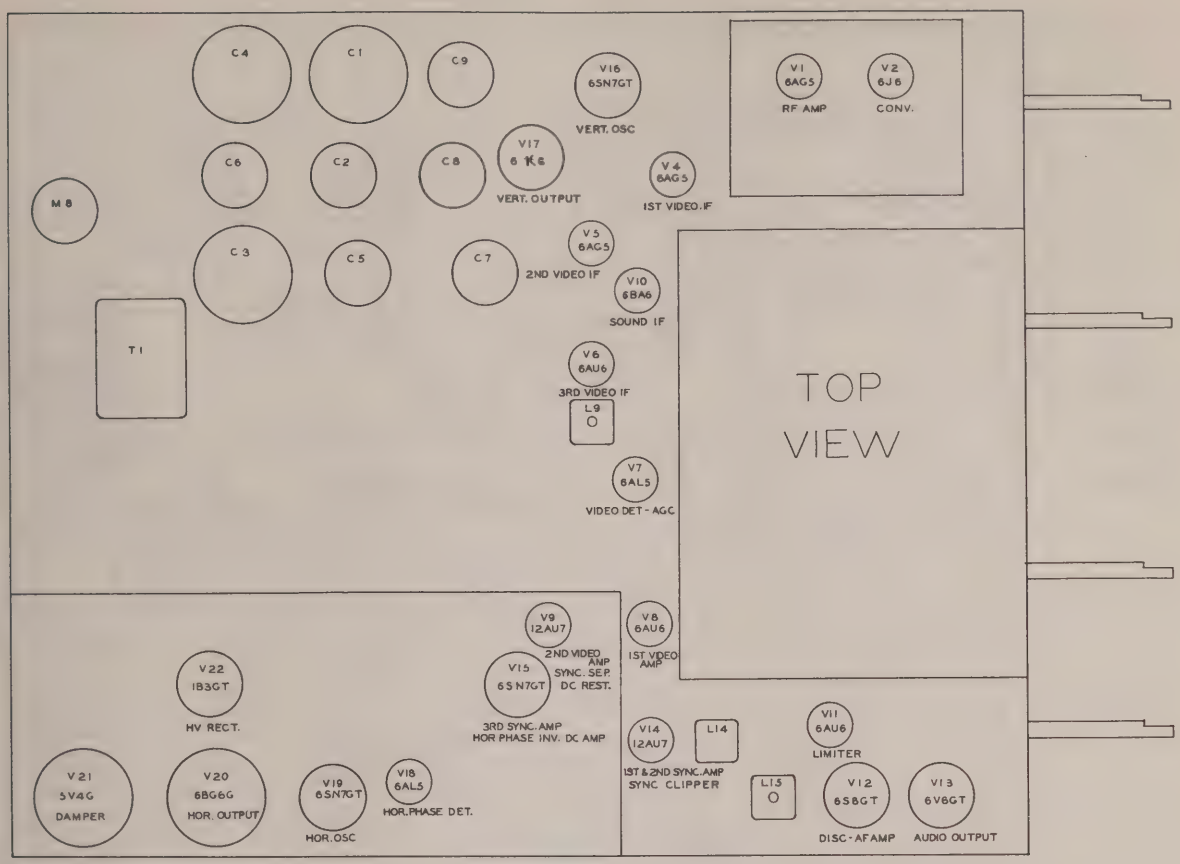


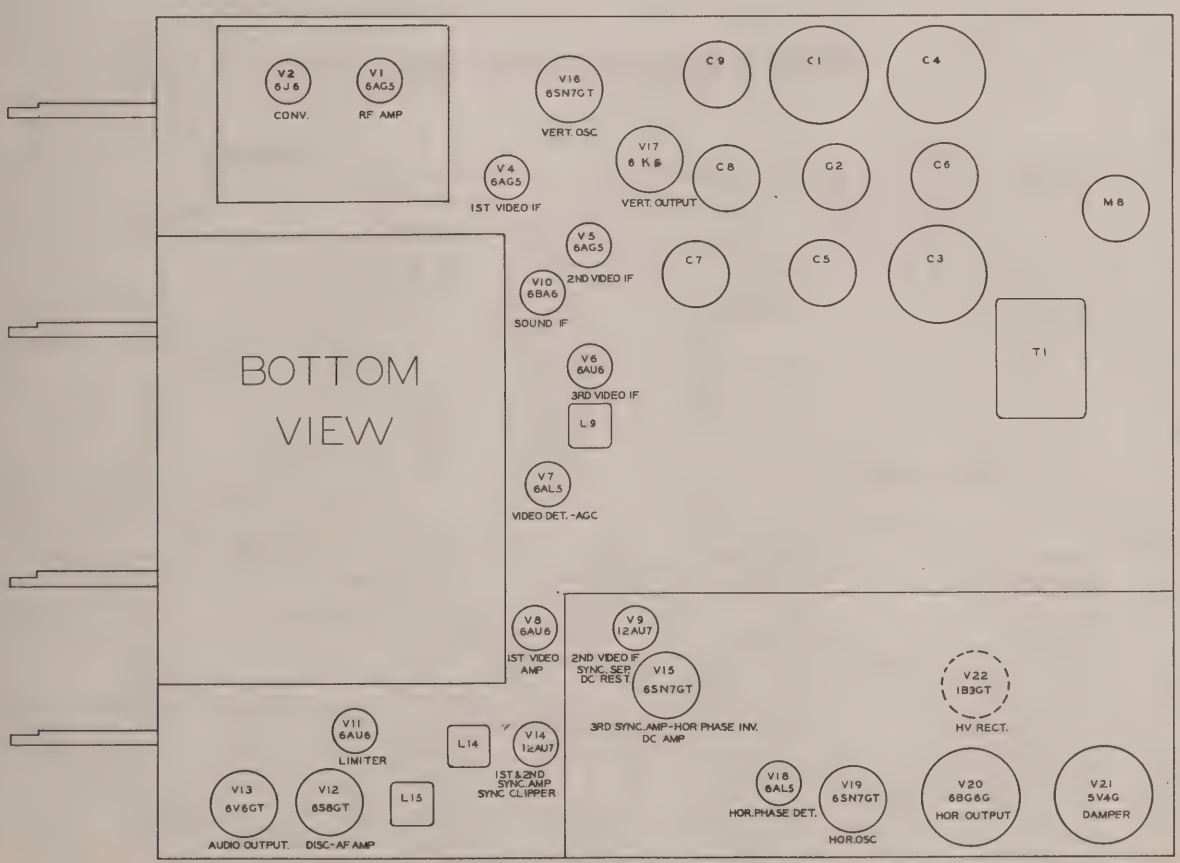
EMERSON MODELS 571, 606, 611, 612, 619, 620, 624, 627

CHASSIS TOP VIEW



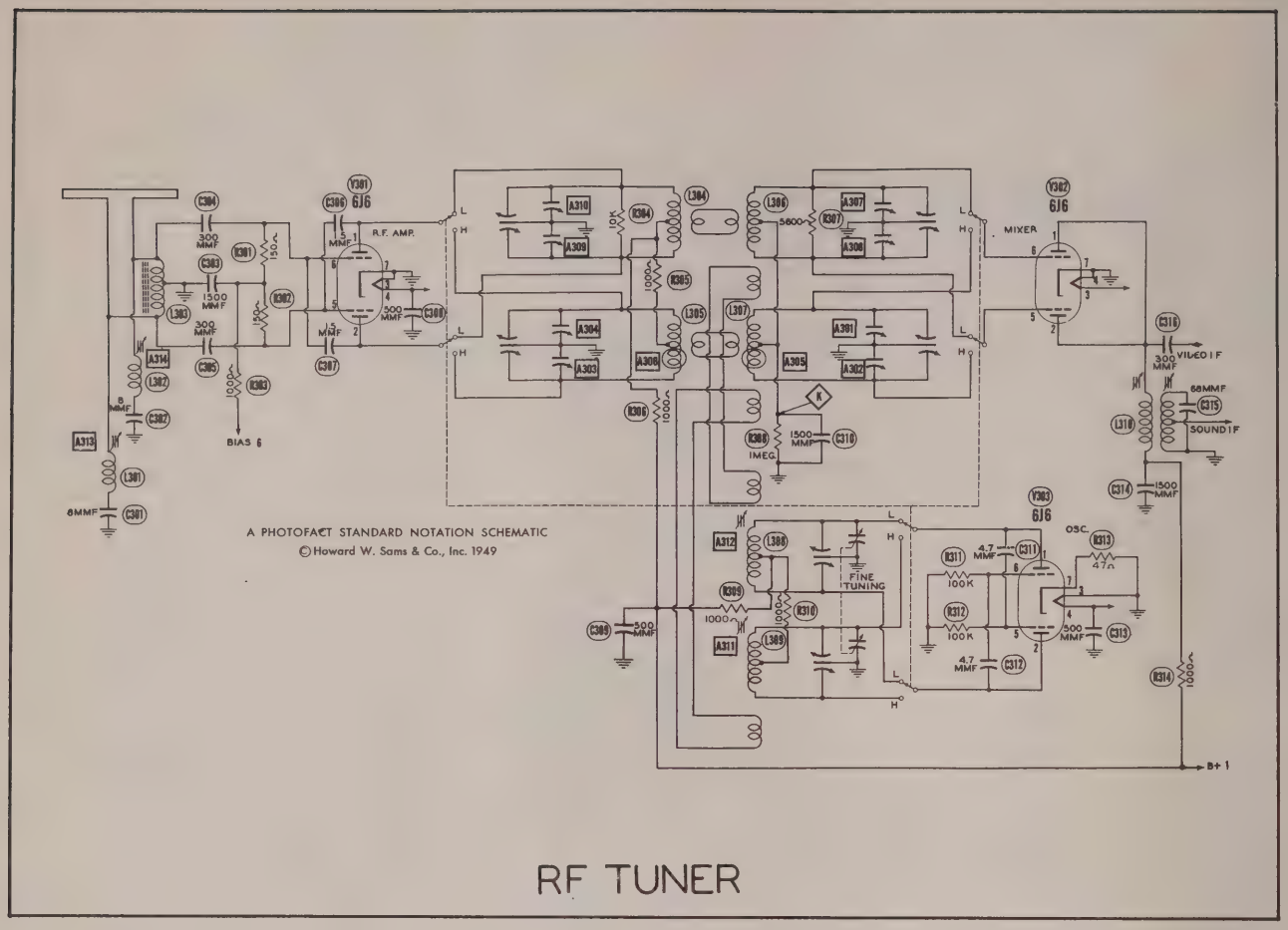
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

EMERSON MODELS 571, 606, 611, 612, 619, 620, 624, 627



RF TUNER

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: 6STANDARD REPLACEMENT	RMA BASE TYPE	
V301	RF Amp.	6J6	7BF	
V302	Mixer	6J6	7BF	
V303	Oscillator	6J6	7BF	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	IDENTIFICATION
C301	8		Fixed Trimmer
C302	8		Fixed Trimmer
C303	1500		Bias Filter
C304	300		RF Coupling
C305	300		RF Coupling
C306	1.5		Neutralizing
C307	1.5		Neutralizing
C308	500		Filament Bypass
C309	500		RF Bypass
C310	1500		Mixer Grid Filter
C311	4.7		Osc. Feedback
C312	4.7		Osc. Feedback
C313	500		Filament Bypass
C314	1500		Mixer Decoupling
C315	68		Fixed Trimmer
C316	300		IF Coupling

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	IDENTIFICATION
R301	150Ω	½	RF Grid
R302	150Ω	½	RF Grid
R303	1000Ω	½	Bias Filter
R304	10KΩ	½	RF Coil Shunt
R305	1000Ω	½	RF Plate
R306	1000Ω	½	RF Plate
R307	5600Ω	½	Mixer Coil Shunt
R308	1 Meg	½	Mixer Grid
R309	1000Ω	½	Osc. Plate
R310	1000Ω	½	Osc. Plate
R311	100KΩ	½	Osc. Grid
R312	100KΩ	½	Osc. Grid
R313	47Ω	½	Osc. Cathode
R314	1000Ω	½	Mixer Decoup.

COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	
L301	Interference Trap	0Ω		
L302	Interference Trap	0Ω		
L303	Ant. Input	0Ω		
L304	RF Low Band	0Ω		
L305	RF High Band	0Ω		
L306	Mixer Low Band	0Ω		
L307	Mixer High Band	0Ω		
L308	Osc. Low Band	0Ω		
L309	Osc. High Band	0Ω		
L310	IF Trans.	.2Ω	0Ω	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If set is to be aligned with picture tube removed, unsolder the wire connected to pins 3 and 6 on the horizontal oscillator (V19) to remove high voltage shock hazard.

Use an isolation transformer if available, if not connect a .1mf condenser in series with the low side of the signal generator and chassis. Connect a 40mf condenser, shunted by .005mf in series with ground side of oscilloscope and chassis, and a 100KΩ resistor in series with the common lead of the VTVM and chassis.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.001MFD	High side to pin 7 (Plate) of 6AL5 (V7). Low side to chassis.	4.5MC (Unmod.)	3	DC Probe to Point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	.001MFD	"	"	"	"	A2,A3	"
3.	.001MFD	"	"	"	DC Probe to Point (B) Common to chassis.	A4	"
4.	.001MFD	"	"	"	DC Probe to Point (C) Common to chassis.	A5	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 7 (Plate) of 6AL5 (V4). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	3	Vert. Amp. to Point (A) Low side to chassis.	A1,A2, A3	Adjust for maximum amplitude and symmetry as per Fig 1.
2.	.001MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A4,A5	Adjust A5 so marker occurs at center of crossover lines as per Fig 2. Adjust A4 for maximum amplitude and straightness of crossover lines. Continue with step 5.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.005MFD	High side to pin 1 (Grid) of 6AU6 (V6). Low side to chassis.	24.5MC (10MC Sweep)	25.75MC	3	Vert. Amp. to Point (D) Low side to chassis.	A6,A7	Adjust for response curve as per Fig 3 with marker as shown.
6.	.005MFD	High side to pin 1 (Grid) of 6AG5 (V5). Low side to chassis.	"	"	"	"	A8	Adjust for response curve as per Fig 4 with marker as shown.
7.		High side to ungrounded tube shield floating over mixer tube. Low side to chassis.	"	"	13	Vert. Amp. to Point (E) thru detector probe (Fig 5). Low side to chassis.	A9,A10	Adjust for response as per Fig 6 with marker as shown.
8.		"	"	22.8MC 21.25MC	13	Vert. Amp. to Point (F) thru probe as above. Low side to chassis.	A11, A12	Adjust A11 to place 22.8MC marker as shown in Fig 7. Adjust A12 to place 21.25MC marker as shown. If necessary, repeat step 7 for optimum results.
9.		"	"	22.25MC 25.75MC	13	Vert. Amp. to Point (D) Low side to chassis.	A11,A8	Adjust for overall response curve as per Fig 8. All effects band pass. A8 positions 25.75MC marker.

FIG. 1

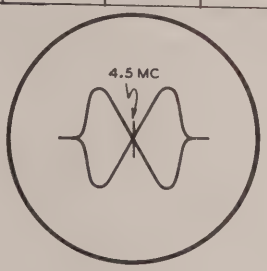


FIG. 2

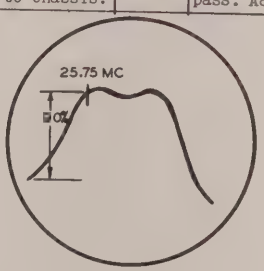


FIG. 3

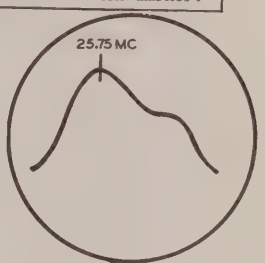


FIG. 4

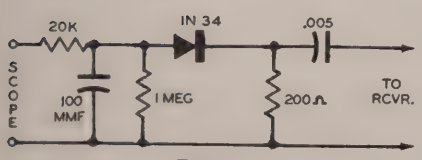


FIG. 5

FIG. 6

FIG. 7

FIG. 8

OSCILLATOR AND RF ADJUSTMENTS

These receivers employ one of three tuners. Determine which tuner is in the set and use the alignment instructions for that tuner.

RF and OSCILLATOR ALIGNMENT (TUNER NO. 470452-8)

The RF and Mixer circuits of this tuner are pre-set at the factory and normally do not require adjustment in the field.

If the majority of the channels seem to need oscillator alignment this may sometimes be done in one operation-Step 23 by adjusting A28. It should be noted that this is an overall oscillator circuit adjustment and should not be adjusted for any one individual channel. If this adjustment will not bring all channel within the range of the fine tuning control, those channels which are off frequency should be adjusted separately as outlined in steps 10 thru 22.

Adjustments A13 and A17 through A27 are accessible through a hole in the front of the tuner as the channel switch is turned to corresponding channel.

Fine tuning control should be set at mid position for all adjustments.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 150Ω carbon res.	To antenna terminals with 150Ω resistor in each lead.	207MC (10MC Sweep)	25.75MC	12	Vert. Amp. to Point ◇ Low side to chassis.	A13	Adjust for response curve as per Fig 8 with 25.75MC marker as shown.
11.	"	"	"	"	"	"	A14, A15, A16	Adjust all trimmers for maximum amplitude and bandwidth while maintaining best symmetry of overall response as per Fig 8.
12.	"	"	216MC (10MC Sweep)	"	13	"	A17	Adjust for proper response curve with marker as shown in Fig 8.
13.	"	"	201MC (10MC Sweep)	"	11	"	A18	"
14.	"	"	195MC (10MC Sweep)	"	10	"	A19	"
15.	"	"	189MC (10MC Sweep)	"	9	"	A20	"
16.	"	"	183MC (10MC Sweep)	"	8	"	A21	"
17.	"	"	177MC (10MC Sweep)	"	7	"	A22	"
18.	"	"	85MC (10MC Sweep)	"	6	"	A23	"
19.	"	"	79MC (10MC Sweep)	"	5	"	A24	"
20.	"	"	69MC (10MC Sweep)	"	4	"	A25	"
21.	"	"	63MC (10MC Sweep)	"	3	"	A26	"
22.	"	"	57MC (10MC Sweep)	"	2	"	A27	"
23.	"	"	See note above	"	See note above	"	A28	"

RF AND MIXER ALIGNMENT (TUNER NO. 470320)

To make adjustments on this tuner it may be necessary to remove the tuner and extend the leads.

It is recommended that the RF and Mixer circuits not be aligned unless definitely known to be out of adjustment and then only if proper test equipment is available.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 150Ω carbon res.	To antenna terminals with 150Ω in each lead.	213MC (10MC Sweep)	211.25MC 217.75MC	13	Vert. Amp. to Point ◇ Low side to chassis.	A301, A302, A303, A304	Adjust for approximately response shown in Fig 9 with markers appearing at more than 70% of peak amplitude. Keep RF and mixer trimmer pairs in approximately same relative position.
11.	"	"	177MC (10MC Sweep)	175.25MC 179.75MC	7	"	A305, A306	Adjust rings for wave form as per Fig 9. Check response on all high-band channels. SLIGHT adjustments of A301, A302, A303, A304, A305 and A306 may be required to obtain optimum response on all channels.
			183MC (10MC Sweep)	181.25MC 185.75MC	8			
			189MC (10MC Sweep)	187.25MC 191.75MC	9			
			195MC (10MC Sweep)	193.25MC 197.75MC	10			
			201MC (10MC Sweep)	199.25MC 203.75MC	11			
			207MC (10MC Sweep)	205.25MC 209.75MC	12			
12.	"	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A307, A308, A309, A310	Adjust for approximate response as shown in Fig 9.
13.	"	"	79MC (10MC Sweep)	77.25MC 81.75MC	5	"		Check response on all low band channels. SLIGHT adjustments of A307, A308, A309 and A310 may be necessary to obtain optimum response on all channels.
			69MC (10MC Sweep)	67.25MC 71.75MC	4			
			63MC (10MC Sweep)	61.25MC 65.75MC	3			
			57MC (10MC Sweep)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT (TUNER NO. 470320)

Fine tuning control should be set at the mid position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	Two 150Ω carbon res.	To antenna terminals with 150Ω in each lead.	216MC (10MC Sweep)	25.75MC	13	DC Probe to Point ⓒ Common to chassis.	A311	Adjust for zero reading.
15.	"	"	88MC (10MC Sweep)	25.75MC	6	"	A312	"
16.	"	"	82MC (10MC Sweep)	25.75MC	5	"		Check to see that all other channels are received well within the range of the fine tuning control. If not, compromise may be made using A311 for high channels and A312 for low channels.
			72MC (10MC Sweep)		4			
			66MC (10MC Sweep)		3			
			60MC (10MC Sweep)		2			
			210MC (10MC Sweep)		12			
			204MC (10MC Sweep)		11			
			198MC (10MC Sweep)		10			
			192MC (10MC Sweep)		9			
			186MC (10MC Sweep)		8			
			180MC (10MC Sweep)		7			

RF AND MIXER ALIGNMENT (TUNER NO. 470233)

It is recommended that the RF and Mixer circuits not be aligned unless definitely known to be out of adjustment and then only if proper test equipment is available.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

Keep the RF and Mixer slug pairs at approximately the same relative position.

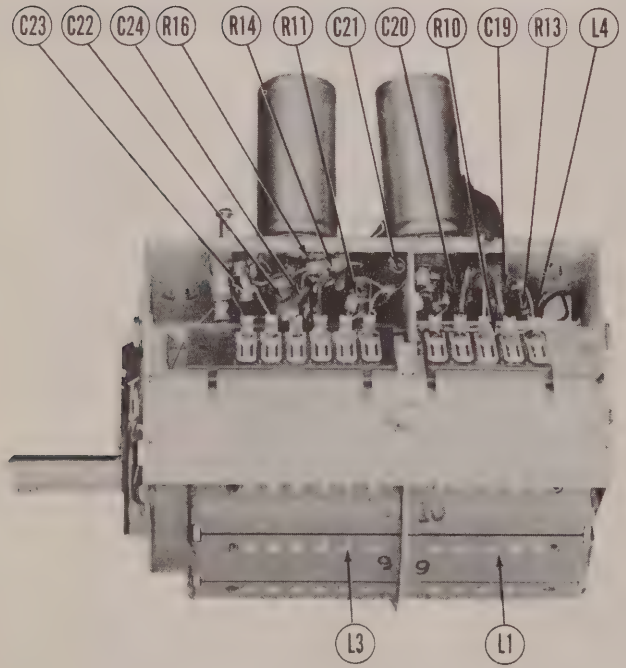
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to Point ⓓ Low side to chassis.	A601, A602, A603, A604	Adjust for response curve as per Fig 9 with markers above 70%.
11.	"	"	207MC (10MC Sweep)	205.25MC 209.75MC	12	"		Check all high band channels for response curve similar to Fig 9. If markers are below 70% on any channel make slight adjustment of A601, A602 A603, and A604 with channel selector set to that channel. Recheck all other high band channels to see that they have not been seriously affected.
			201MC (10MC Sweep)	199.25MC 203.75MC	11			
			195MC (10MC Sweep)	193.25MC 197.75MC	10			
			189MC (10MC Sweep)	187.25MC 191.75MC	9			
			183MC (10MC Sweep)	181.25MC 185.75MC	8			
			177MC (10MC Sweep)	175.25MC 179.75MC	7			
12.	"	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A605, A606, A607, A608	Adjust for response curve as per Fig 9 with markers above 70%.
13.	"	"	79MC (10MC Sweep)	77.25MC 81.75MC	5	"		Check all other low band channels for response similiar to Fig 9. If markers are below 70% on any channel make slight adjustment of A605, A606 A607, A608 with channel selector on that channel. Recheck all low band channels to see that they have not been seriously affected.
			69MC (10MC Sweep)	67.25MC 71.75MC	4			
			63MC (10MC Sweep)	61.25MC 65.75MC	3			
			57MC (10MC Sweep)	55.25MC 59.75MC	2			

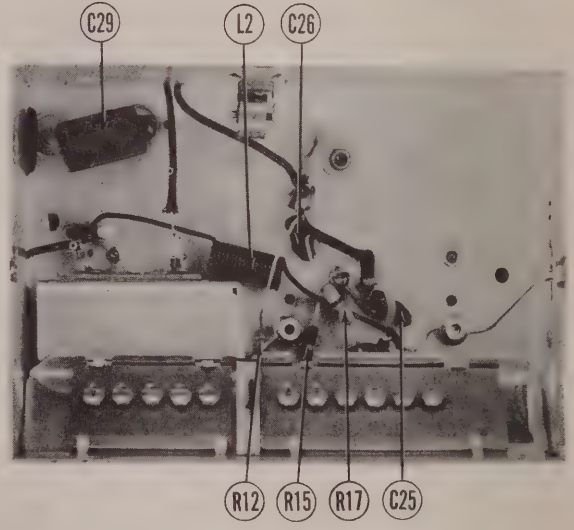
FIG. 9

OSCILLATOR ALIGNMENT (TUNER NO. 470233)

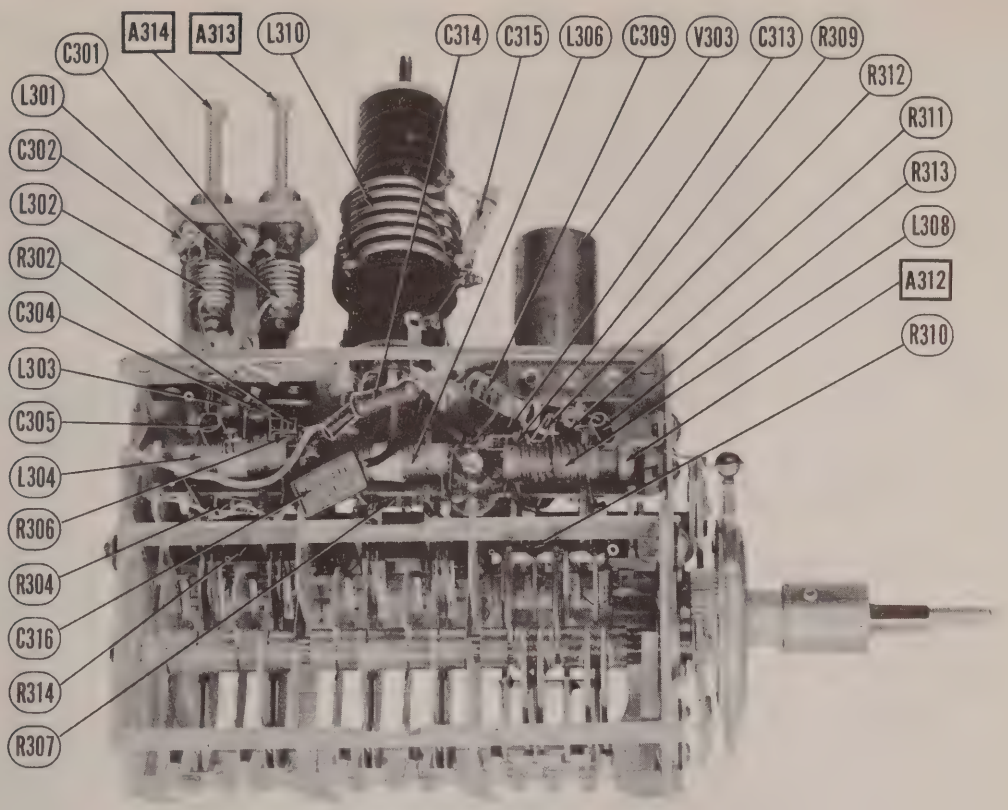
Set the fine tuning control approximately 140° from its fully counter-clockwise position. This aligns the holes in drive disc with the adjustment screws on the oscillator wafer of the channel switch. Do not change this setting during oscillator alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	216MC (10MC Sweep)	25.75MC	13	DC Probe to Point ⊕ Common to chassis.	A609, A610	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Keep oscillator slug pairs at approximately the same relative position.
15.	"	"	210MC (10MC Sweep)	"	12	"	A611	Adjust for zero reading as outlined on step 14.
16.	"	"	204MC (10MC Sweep)	"	11	"	A612	"
17.	"	"	198MC (10MC Sweep)	"	10	"	A613	"
18.	"	"	192MC (10MC Sweep)	"	9	"	A614	"
19.	"	"	186MC (10MC Sweep)	"	8	"	A615	"
20.	"	"	180MC (10MC Sweep)	"	7	"	A616	"
21.	"	"	88MC (10MC Sweep)	"	6	"	A617, A618	Adjust for zero reading as outlined in step 14. Keep oscillator slug pairs at approximately the same relative position.
22.	"	"	82MC (10MC Sweep)	"	5	"	A619	Adjust for zero reading as outlined in step 14.
23.	"	"	72MC (10MC Sweep)	"	4	"	A620	"
24.	"	"	66MC (10MC Sweep)	"	3	"	A621	"
25.	"	"	60MC (10MC Sweep)	"	2	"	A622	"

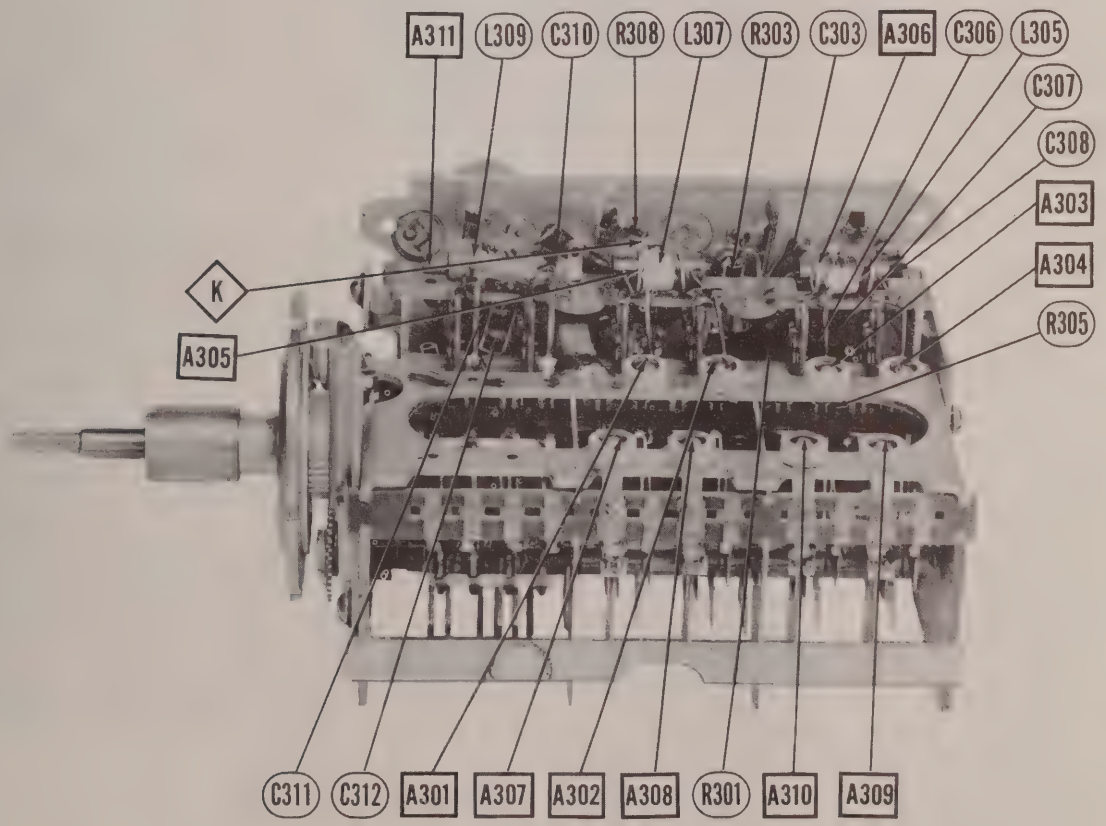




RF TUNER



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.4VDC	0V	6.3VAC	0V	87VDC	87VDC	0V		
V 2	6J6	70VDC	105VDC	6.3VAC	0V	-1.9VDC	§-3.4VDC	0V		
V 4	6AG5	-.4VDC	.5VDC	0V	6.3VAC	120VDC	120VDC	.5VDC		
V 5	6AG5	-.4VDC	.3VDC	0V	6.3VAC	120VDC	120VDC	.3VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	160VDC	160VDC	1.6VDC		
V 7	6AL5	0V	-.4VDC	0V	6.3VAC	0V	0V	-.3VDC		
V 8	6AU6	-.2VDC	2VDC	0V	6.3VAC	125VDC	125VDC	2VDC		
V 9	12AU7	225VDC	-1.4VDC	0V	0V	0V	42VDC	0V	3.5VDC	6.3VAC
V 10	6BA6	0V	0V	0V	6.3VAC	115VDC	125VDC	1.2VDC		
V 11	6AU6	-.4VDC	0V	0V	6.3VAC	125VDC	41VDC	0V		
V 12	6S8GT	-.4VDC	0V	-.9VDC	-.5VDC	-.2VDC	75VDC	6.3VAC	0V	TOP CAP -.6VDC
V 13	6V6GT	0V	0V	165VDC	150VDC	-2.4VDC	-8.4VDC	6.3VAC	0V	
V 14	12AU7	100VDC	-1.5VDC	0V	0V	0V	45VDC	-.7VDC	0V	6.3VAC
V 15	6SN7GT	♯.2VDC	♯240VDC	♯9.6VDC	♯-.2VDC	♯47.5VDC	♯.8VDC	6.3VAC	0V	
V 16	6SN7GT	◓ -135VDC	◓75VDC ◓220VDC	◓0V	◓-135VDC	◓280VDC	◓0V	6.3VAC	0V	
V 17	6K6GT	0V	0V	◓205VDC	◓205VDC	◓14VDC	◓5VDC ◓60VDC	6.3VAC	◓5VDC ◓60VDC	
V 18	6AL5	♯-9VDC	♯-.9VDC	0V	6.3VAC	♯-1.2VDC	♯0V	♯-1.3VDC		
V 19	6SN7GT	♯-50VDC	♯260VDC	♯0V	♯-50VDC	♯260VDC	♯0V	6.3VAC	0V	
V 20	6BG6G	0V	0V	◓8VDC	0V	◓-19VDC	◓0V	6.3VAC	◓240VDC	TOP CAP *
V 21	5V4G	0V	270VDC	0V	175VDC	0V	175VDC	0V	270VDC	
V 22	1B3GT	* DO NOT MEASURE								
V 28	10BP4	0V	2.7VDC	PIN 10 240VDC	PIN 11 130VDC	PIN 12 6.3VAC				
V 29										
V 30										

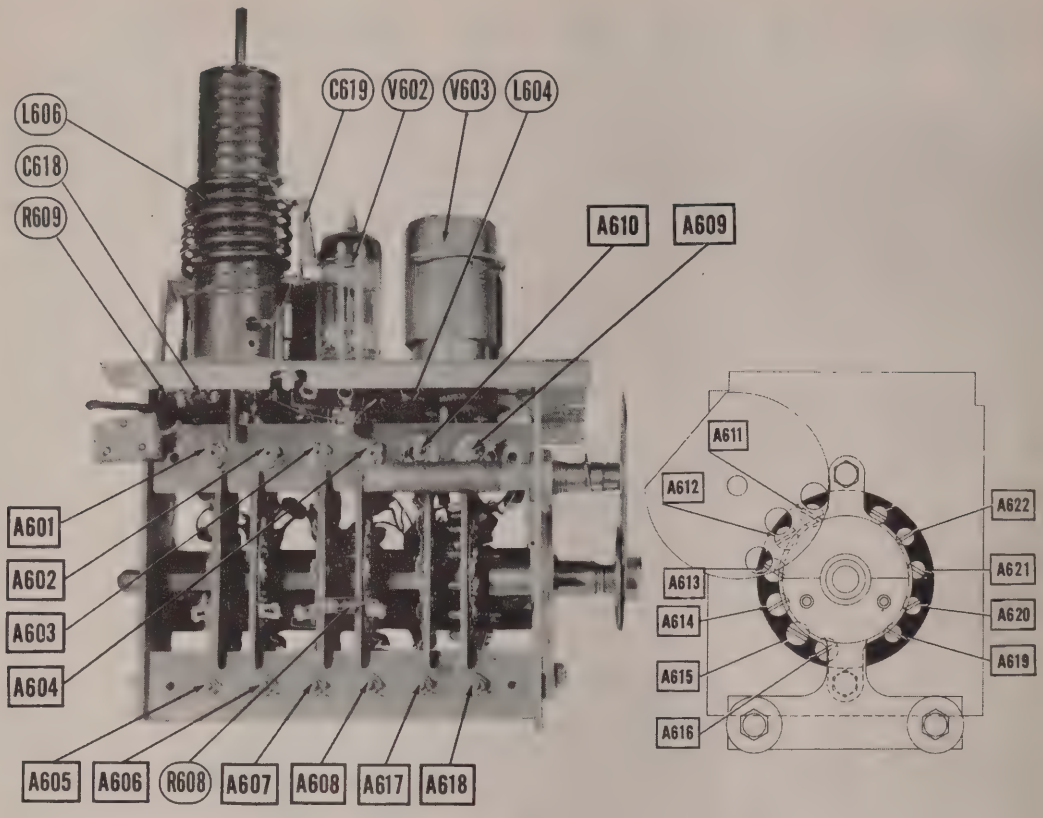
§ Taken with vacuum tube voltmeter.
♯ Measured from pin 6 of V18
◓ Measured from pin 6 of V16

RESISTANCE READINGS

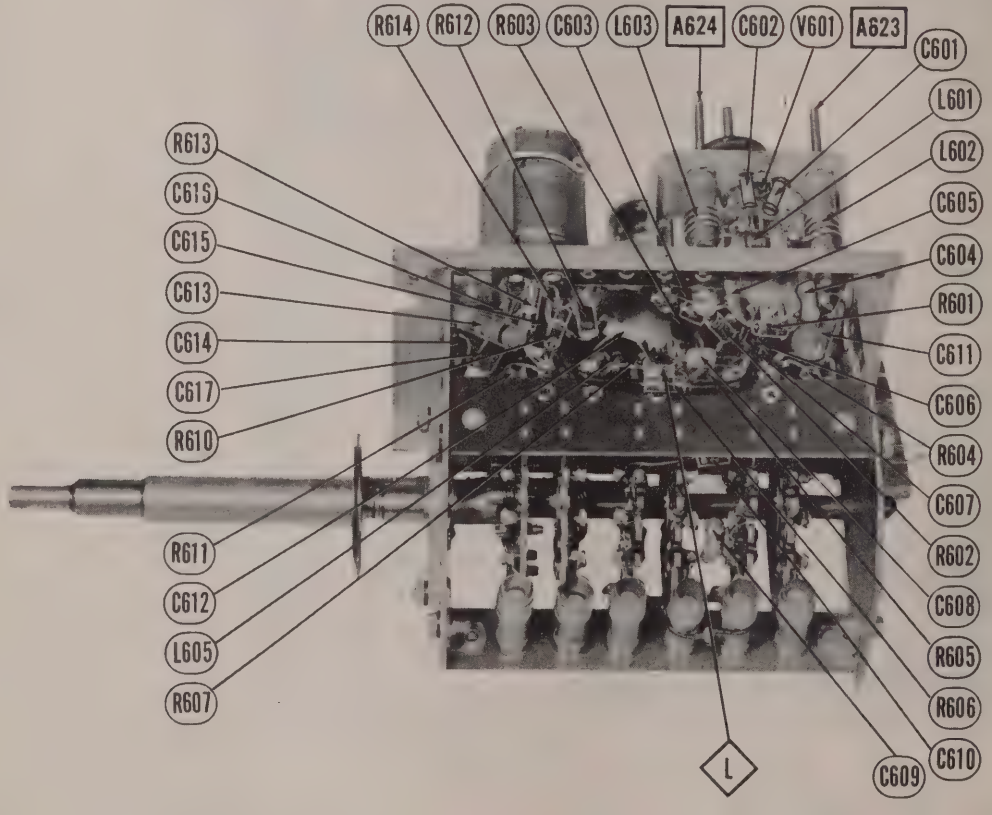
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	3.2 Meg.	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 2	6J6	†6KΩ	†3KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 4	6AG5	3.2 Meg.	68Ω	0Ω	.1Ω	†1.6KΩ	†1.6KΩ	68Ω		
V 5	6AG5	3.2 Meg.	33Ω	0Ω	.1Ω	†1.6KΩ	†1.6KΩ	33Ω		
V 6	6AU6	2.5Ω	0Ω	0Ω	.1Ω	†1000Ω	†1000Ω	150Ω		
V 7	6AL5	1Ω	2.2 Meg.	0Ω	.1Ω	.5Ω	0Ω	4.7KΩ		
V 8	6AU6	1 Meg.	1000Ω	0Ω	.1Ω	†2KΩ	†600Ω	1000Ω		
V 9	12AU7	†14.5KΩ	1 Meg.	0Ω	0Ω	0Ω	†18KΩ	0Ω	470KΩ	.1Ω
V 10	6BA6	4Ω	0Ω	0Ω	.1Ω	†1.6KΩ	†1.6KΩ	68Ω		
V 11	6AU6	100KΩ	0Ω	0Ω	.1Ω	†1.6KΩ	†6.5KΩ	0Ω		
V 12	6S8GT	100KΩ	0Ω	100KΩ	Inf.	200KΩ	†470KΩ	.1Ω	0Ω	TOP CAP 15 Meg.
V 13	6V6GT	0Ω	0Ω	†500Ω	†11KΩ	470KΩ	200Ω	.1Ω	0Ω	
V 14	12AU7	†11KΩ	180KΩ	0Ω	0Ω	0Ω	†18KΩ	1 Meg.	0Ω	.1Ω
V 15	6SN7GT	1 Meg.	†7KΩ	4.5KΩ	Inf.	†100KΩ	4.5KΩ	.1Ω	0Ω	
V 16	6SN7GT	1.5Meg.	†2.5Meg. †470KΩ	♦200Ω	1.5Meg.	†100KΩ	♦200Ω	.1Ω	0Ω	
V 17	6K6GT	Inf.	0Ω	†10KΩ	†10KΩ	4.7Meg.	17KΩ 12KΩ	.1Ω	10KΩ 4.5KΩ	
V 18	6AL5	Inf.	Inf.	0Ω	.1Ω	150KΩ	♦150Ω	150KΩ		
V 19	6SN7GT	150KΩ	†4.7KΩ	♦150Ω	150KΩ	†470KΩ	♦150Ω	.1Ω	0Ω	
V 20	6BG6G	Inf.	0Ω	♦300Ω	Inf.	470KΩ	♦200Ω	.1Ω	†10KΩ	TOP CAP †7.5KΩ
V 21	5V4G	Inf.	†7.5KΩ	Inf.	†150Ω	Inf.	†150Ω	Inf.	†7.5KΩ	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦360Ω
V 28	10BP4	0Ω	†700KΩ	PIN 10 ♦3.5KΩ	PIN 11 8KΩ	PIN 12 .1Ω				
V 29										
V 30										

† Measured from pin 4 of M8.
♦ Measured from pin 8 of V21.
♦ Measured from pin 7 of M8.

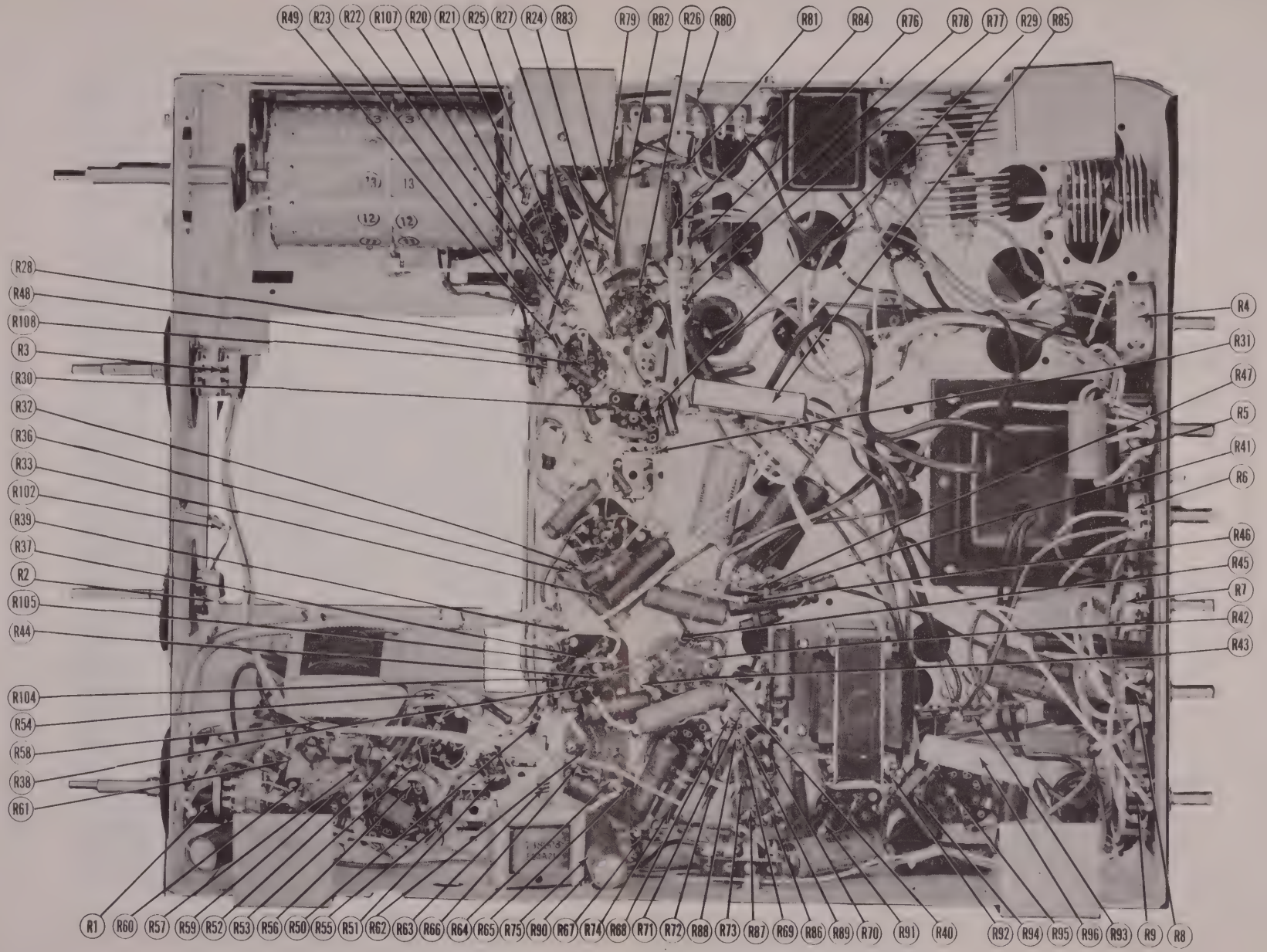
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



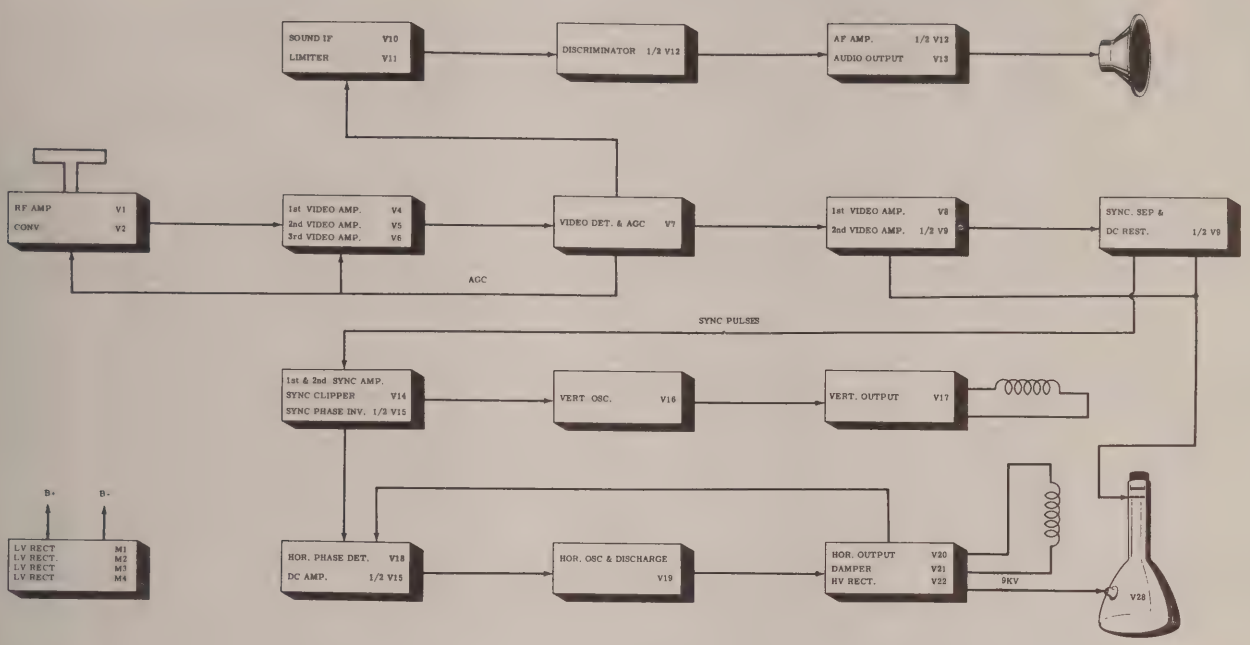
RF TUNER-LEFT SIDE



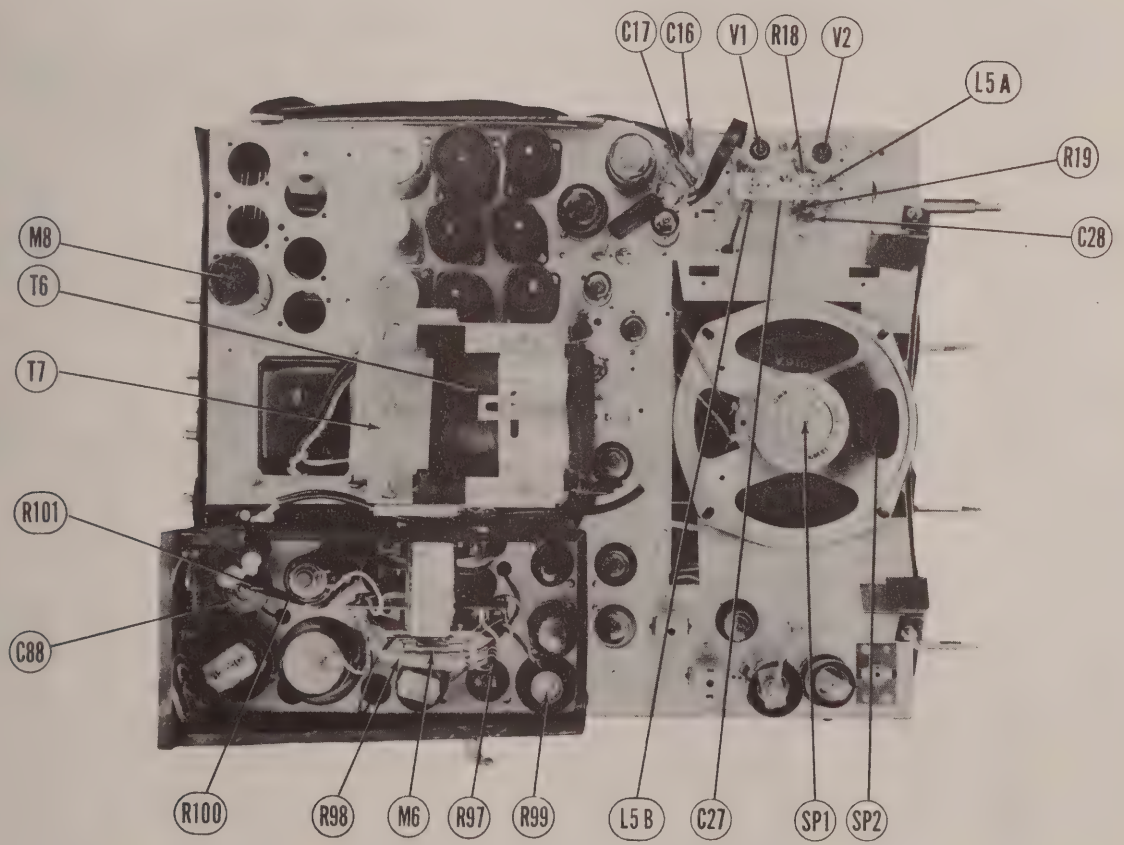
RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	EIA BASE TYPE	NOTES
V1	RF Amp.	800535	6AQ5	7BD	
V2	Converter	800538	6J6	7BF	
V4	1st Video IF	800535	6AQ5	7BD	
V5	2nd Video IF	800535	6AQ5	7BD	
V6	3rd Video IF	800533	6AU6	7BK	
V7	Video Det.-AGC Rect.	800541	6AL5	6BT	
V8	1st Video Amp.	800533	6AU6	7BK	
V9	2nd Video Amp.-Sync. Sep.-DC Restorer	800026	12AU7	9A	
V10	Sound IF Amp.	800531	6BA6	7BK	
V11	Limiter	800533	6AU6	7BK	
V12	Disc.-AF Amp.	800015	6S8GT	8CB	
V13	Audio Output	800270	6V6GT	7AC	
V14	1st and 2nd Sync. Amp.-Sync. Clipper	800026	12AU7	9A	
V15	3rd Sync. Amp.-Hor. Phase Inv.-DC Amp.	800380	6SN7GT	8BD	
V16	Vert. Osc.	800380	6SN7GT	8BD	
V17	Vert. Output	800016	6K6GT	7B	
V18	Hor. Phase Det.	800541	6AL5	6BT	
V19	Hor. Osc. and Disch.	800380	6SN7GT	8BD	
V20	Hor. Output	800004	6BQ6G	8BT	
V21	Damper	640011	5U4G	5L	
V22	HV Rectifier	800450	1B3GT	3C	
V23	Rectifier	800480	25Z6GT	7Q	
V24	Rectifier	800480	25Z6GT	7Q	
V25	Rectifier	800480	25Z6GT	7Q	Chassis 120086B only.
V26	Rectifier	800480	25Z6GT	7Q	
V27	Rectifier	800480	25Z6GT	7Q	
V28A	Picture Tube	810000	10BP4	12D	Chassis 120086B, 120087B-D, 120092D only.
B	Picture Tube		12LP4	12D	Chassis 120091D only.
C	Picture Tube		12QP4	12D	Chassis 120091QD only.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	925128	AFN16D	UP7AJ474		TVL-61	Voltage Doubler Cap. †
B	80	175	925099	AFN16D	UP4AJ 1005		TVL-1	Voltage Doubler Cap. *
C2A	80	150	925099	AFN16D	UP4AJ 1005		TVL-1	Voltage Doubler Cap. †
B	80	150	925093					Voltage Doubler Cap. *
C3A	80	300	925129	AFH1616G	UP8830		TVL-14	◓ Filter †
B	80	300						▲ Filter †
C	80	300	925086					◓ Filter *
D	80	300						▲ Filter *
C4A	80	300	925131	AFH1616G	UP8830		TVL-14	◓ Filter †
B	80	300						▲ Filter †
C	80	350	925096					◓ Filter *
D	80	350						▲ Filter *
C5A	1000	15	925097	AF200200P	UP10BJ 1059		TVL-13	▲ Hor. Cent. Cont. Byp. ■ Vert. Cent. Cont. Byp.
B	1000	15						
C6A	60	300	925134	AF10J	UP8030		TVL-4	Filter †
B	60	350	925091					Filter *
C	80	250						Filter *
C7	80	300	925132	AFH16G	UP8030		TVL-5	Filter †
C8A	80	300	925133	AFH16G	UP8030		TVL-5	Filter †
B	80	250	925093					Filter *
C9A	80	300	925133	AFH16G	UP8030		TVL-5	Filter †
B	80	250	925093					Filter *
C10	8	250	925111	PRS250/8	BR825		UT-82	Decoupling
C11	8	350	925114	PRS350/8	BR835		UT-82	Low Pass Filter
C12	8	250	925111	PRS250/8	BR825		UT-82	Output Decoupling
C13	8	250	925111	PRS250/8	BR825		UT-82	Decoupling
C14	8	250	925111	PRS250/8	BR825		UT- 82	Vert. Output Dec.
C15	10	50	925072	PRS50/10	BR105		TVA-14	Vert. Output Cath. Byp.
C16	1000		928006	1468-001	1W5D1	GP2L-001	1FM-21	Ant. Coupling
C17	1000		928006	1468-001	1W5D1	GP2L-001	1FM-21	Ant. Coupling
C18	.05	400	922101	P488-05	GT4S5		TM-15	Ext. Ground Isolation
C19	5					NPOK-5		Fixed Trimmer
C20	1000					GP2L-001		RF Fil. Bypass
C21	120					GP2K-120		RF Decoupling
C22	100					GP1K-100		RF Coupling
C23	10					NPOK-10		Fixed Trimmer
C24	20					NPOK-20		Osc. Grid Cap.
C25	1000					GP2L-001		Mixer Fil. Bypass
C26	1000					GP2L-001		RF Bypass
C27	10	300				NPOK-10		Fixed Trimmer
C28	100					GP1K-100		Mixer Plate Dec.
C29	270	500	910015	1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C30	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	AGC Filter
C31	5000			1467-005	1D5D5	GP2M-005	29C1	1st V. IF Cath. Bypass
C32	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	1st V. IF Dec.
C33	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	Decoupling ‡
C34	270	500	910015	1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C35	75			1468-000075		NPOK-75		Fixed Trimmer
C36	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	AGC Filter
C37	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd V. IF Decoupling
C38	270	500	910015	1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C39	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Cath. Bypass
C40	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Decoupling
C41	30		910290		5W5Q3	NO80-338-33	MS-43	IF Coupling
C42	.1	200	923067	P288-1		GT2P1	TM-1	AGC Filter
C43	.05	400	923082	P488-05	GT4S5		TM-15	Video Coupling
C44	200	500	910028	1468-0002	5W5T2	GP2K-200	1FM-32	1st V. Amp. Cath. Byp.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C45	150	500	910029	1468-00015	5W5T15	GP2K-150	1FM-315	1st V. Amp. Cath. Byp.
C46	.01	400	923061	P488-01	GT4S1	GP2-335-01	TM-11	AGC Diode Filter
C47	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C48	.05	400	923062	P488-05	GT4S5		TM-15	Video Coupling
C49	.05	400	923062	P488-05	GT4S5		TM-15	Video Coupling
C50	.01	400	923064	P488-1	GT4P1		TM-1	Video Coupling
C51	10	400	910130	1468-00001	5W5Q1	GP1K-10	MS-41	S. IF Coupling
C52	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Screen Byp.
C53	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Plate Dec.
C54	68	500	910031	1468-000075	5W5Q7	GP1K-68	1FM-475	Limiter Grid Filter
C55	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	Limiter Screen Byp.
C56	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	Limiter Plate Dec.
C57	110	500	910010	1468-0001	5W5T1	GP2K-120	1FM-31	RF Bypass
C58	.001	600	923079	P688-001	GT6D1	GP2L-001	TM-21	De-emphasis
C59	.01	400	923061	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C60	.005	400	923078	P688-005	GT6D5	GP2M-005	TM-25	Vol. Cont. Isolation
C61	.01	400	923061	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C62	.05	400	923062	P488-05	GT4S5		TM-15	Audio Coupling
C63	.005	400	923078	P688-005	GT6D5		TM-25	Output Plate Bypass
C64	.01	400	923061	P488-01	GT4S1	GP2-335-01	TM-11	Sync. Coupling
C65	.05	400	923062	P488-05	GT4S5		TM-15	Sync. Coupling
C66	.05	400	923062	P488-05	GT4S5		TM-15	Sync. Coupling
C67	.01	600	923075	P688-01	GT6S1	GP2-335-01	TM-11	Vert. Sync. Coupling
C68	.005	400	923078	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C69	.005	400	923078	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C70	.25	400	923086	P488-25	GT4P25		TC-2	Vert. Osc. Plate Dec.
C71	.003	400	923075	P688-003	GT6D3	GP2M-003	TM-23	Vert. Osc. Grid Cap.
C72	.05	600	923073	P688-05	GT6S5		TM-15	Vert. Discharge
C73	.05	600	923073	P688-05	GT6S5		TM-15	Vert. Sweep Coupling
C74	1000	500	910027	1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C75	1000	500	910027	1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C76	110	500	910010	1468-0001	5W5T1	GP1K-120	1FM-31	AFC Filter
C77	.05	200	923068	P288-05	GT2S5		TM-15	Diode Load Cap.
C78	.25	200	923080	P488-25	GT2P25		TC-2	Phase Shift Cap.
C79	.05	600	923075	P688-005	GT6D5	GP2M-005	TM-25	Hor. AFC Feedback
C80	780	500	910023					Hor. Osc. Grid Cap.
C81	470	500	910017	1468-0005	5W5T5	GP2K-470	1FM-35	Hor. Discharge
C82	.001	600	923079	P688-001	GT6D1	GP2L-001	TM-21	Hor. Sweep Coupling
C83	.1	200	923067	P288-1		GT2P1	TM-1	Hor. Output Cath. Byp.
C84	.05	600	923073	P688-05	GT6S5		TM-15	Hor. Output Screen Byp.
C85	.05	600	923073	P688-05	GT6S5		TM-15	Damper Filter
C86	.035	600	923074	P688-033				Damper Filter
C87	.05	400	923062	P488-05	GT4S5		TM-15	Fixed Trimmer
C88	500	10000	923003			410-500		HV Filter
C89	.1	400	923064	P488-1	GT4P1		TM-1	Pic. Tube Cath. Dec.
C90	.05	400	922101	P488-05	GT4S5		TM-15	Line Filter

* Used only in chassis 120086
† Used only in chassis 120087B,-D
‡ Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	100Ω	2	390068		390068	Contrast control, tapped ② 75Ω, Wire Wound *
B	1 Meg.	‡				Volume control and switch (Dual Concentric)
C	10KΩ	‡	390034			Contrast control
D	1 Meg.	‡				Volume control and switch (Dual Concentric)
R2	100KΩ	‡	390032	Q11-128	M-43-S	Brightness control
R3A	1 Meg.	‡	390036		390036	Vert. hold control
B	50KΩ	4				Horiz. hold control (Dual Concentric)
R4	1500Ω	4	390037			Focus control (Wire Wound)
R5	5000Ω	2	390039	W-5000	43-5000	Vert. linearity control (Wire Wound)
R6	2 Meg.	‡	390038	Q11-139	M-32-S	Vert. size control
R7	20KΩ	‡	390035	Q11-119	M-36-S	Horiz. drive control
R8	30Ω	2	390054	W-30	43-30	Horiz. centering control (Wire Wound)
R9	30Ω	2	390033	W-30X15	43-30CT	Vert. centering control, tapped ⑤ 15Ω (Wire Wound)

* Used only in chassis 120087B

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	390Ω	‡			Ant. Coil Shunt
R11	10KΩ	‡			RF Coil Shunt
R12	2200Ω	‡			RF Decoupling
R13	47KΩ	‡			AGC Network
R14	47000Ω	‡			Conv. Grid
R15	220KΩ	‡			Conv. Grid
R16	10KΩ	‡			Osc. Grid
R17	47000Ω	‡			Osc. Plate
R18	18KΩ	‡			Conv. Plate Coil Shunt
R19	10000Ω	‡	340492	BTS-1000	Conv. Plate Decoupling
R20	56000Ω	‡	340672		1st Video IF Grid See Note 2
R21	68Ω	‡	340212		1st Video IF Cathode
R22	10000Ω	‡	340492	BTS-1000	1st Video IF Decoupling
R23	10000Ω	‡	340492	BTS-1000	AGC Network
R24	10KΩ	‡	340732		1st Video IF Transformer Shunt
R25	47000Ω	‡	340652		2nd Video IF Grid
R26	33Ω	‡	340132		2nd Video IF Cathode
R27	10000Ω	‡	340492	BTS-1000	2nd Video IF Decoupling
R28	10000Ω	‡	340492	BTS-1000	AGC Network
R29	39000Ω	‡	340632	BTS-3900	3rd Video IF Grid Coil Shunt
R30	150Ω	‡	340292		3rd Video IF Cathode
R31	10000Ω	‡	340492	BTS-1000	3rd Video IF Decoupling
R32	2.2 Meg.	‡	341282	BTS-2.2 Meg.	AGC Diode Load
R33	1 Meg.	‡	341212	BTS-1 Meg.	AGC Network
R34	100KΩ	‡	340972	BTS-100K	Delayed AGC Network See Note 1
R35	10KΩ	‡	340732	BTS-10K	Video Det. Diode Load See Note 1
R36	47000Ω	‡	340652	BTS-4700	Video Det. Diode Load
R37	1 Meg.	‡	341212	BTS-1 Meg.	1st Video Amp. Grid

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R38	1500Ω	‡	330532	BTS-1500	1st Video Amp. Plate
R39	68KΩ	‡	340932	BTS-68K	Voltage Divider
R40	1 Meg.	‡	341212	BTS-1 Meg.	2nd Video Amp. Grid
R41	3900Ω	‡	340632	BTS-3900	2nd Video Amp. Plate
R42	470KΩ	‡	341132	BTS-470K	Voltage Divider
R43	22KΩ	‡	340812	BTS-22K	Voltage Divider
R44	47KΩ	‡	340892	BTS-47K	Sync. Sep. Plate
R45	220KΩ	‡	341052	BTS-220K	Picture Tube Grid
R46	2200Ω	‡	340572	BTS-2200	Phase Correction
R47	3300Ω	‡	340612	BTS-3300	Filter
R48	68Ω	‡	340212		Sound IF Cathode
R49	1000Ω	‡	340492	BTS-1000	Sound IF Screen Decoupling
R50	1000Ω	‡	340492	BTS-1000	Sound IF Plate Decoupling
R51	100KΩ	‡	340972	BTS-100K	Limiter Grid
R52	10KΩ	2	397014		Limiter Screen Decoupling
R53	1000Ω	‡	340492	BTS-1000	Limiter Plate Decoupling
R54	4700Ω	‡	340652	BTS-4700	Voltage Divider
R55	100KΩ 5%	‡	330572	BTS-100K-5%	Disc. Diode Load
R56	100KΩ	‡	340972	BTS-100K	Disc. Diode Load
R57	68KΩ	‡	340932	BTS-68K	De-emphasis
R58	15 Meg.20%	‡	351492	BTS-15 Meg.	AF Grid
R59	470KΩ	‡	341132	BTS-470K	AF Plate
R60	470KΩ	‡	341132	BTS-470K	Output Grid
R61	10KΩ	‡	340732	BTS-10K	Filter See Note 3
R62	1 Meg.	1	341212	BTS-1 Meg.	1st Sync. Amp. Grid
R63	22KΩ	1	370812	BTA-22K	1st Sync. Amp. Plate
R64	180KΩ	‡	341032	BTS-180K	2nd Sync. Amp. Grid
R65	10KΩ	1	370732	BTA-10K	2nd Sync. Amp. Plate
R66	47KΩ	‡	340892	BTS-47K	Voltage Divider
R67	1000Ω	‡	340492	BTS-1000	2nd Sync. Amp. Plate
R68	1 Meg.	‡	341212	BTS-1 Meg.	3rd Sync. Amp. Grid
R69	1000Ω 5%	‡	330492	BTS-1000-5%	3rd Sync. Amp. Cathode
R70	150Ω	‡	340292	BW-½-150	3rd Sync. Amp. Cathode
R71	4700Ω 5%	‡	330652	BTS-4700-5%	3rd Sync. Amp. Plate
R72	2200Ω 5%	‡	330572	BTS-2200-5%	3rd Sync. Amp. Plate
R73	1000Ω	‡	340492	BTS-1000	Horiz. Phase Inv. Cathode
R74	100KΩ	2	397029	BT-2-100K	Horiz. Phase Inv. Plate
R75	47KΩ	‡	340892	BTS-47K	Phase Shifter
R76	22KΩ	‡	340812	BTS-22K	Differentiator
R77	22KΩ	‡	340812	BTS-22K	Integrator
R78	4700Ω	‡	340652	BTS-4700	Integrator
R79	1.5Meg.5%	‡	331252	BTS-1.5Meg. 5%	Vert. Osc. Grid
R80	100KΩ	1	370972	BTA-100K	Vert. Osc. Plate Decoupling
R81	470KΩ	‡	341132	BTS-470K	Vert. Osc. Plate
R82	8200Ω	‡	340712	BTS-8200	Vert. Peaking
R83	4.7 Meg.	‡	341372	BTS-4.7 Meg.	Vert. Output Grid
R84	270Ω	‡	340352	BW-½-270	Vert. Output Cathode
R85	10KΩ	3	392043	AB-10K	Filter
R86	220KΩ	‡	341052	BTS-220K	Horiz. Phase Det. Load
R87	220KΩ	‡	341052	BTS-220K	Horiz. Phase Det. Load
R88	100KΩ 5%	‡	330572	BTS-100K-5%	Horiz. Phase Det. Load
R89	100KΩ 5%	‡	330972	BTS-100K-5%	Horiz. Phase Det. Load
R90	4700Ω	1	370652	BTA-4700	Filter
R91	47KΩ	‡	340892	BTS-47K	Horiz. Osc. Grid
R92	470KΩ 5%	‡	331132	BTS-470K-5%	Horiz. Osc. Plate
R93	18KΩ	‡	340752	BTS-18K	Horiz. Peaking
R94	470KΩ	‡	341132	BTS-470K	Horiz. Output Grid
R95	100Ω	1	370252	BW-1-100	Horiz. Output Cathode
R96	10KΩ	4	397044	AB-10K	Horiz. Output Screen
R97	470KΩ	1	371132	BTA-470K	Feedback
R98	470KΩ	1	371132	BTA-470K	Feedback
R99	7500Ω	25	394007	EP-7500	Damper Filter Wire Wound
R100	2.3Ω	1	397041		HV Filament Wire Wound
R101	1 Meg.	1	371212		HV Filter
R102	4700Ω	‡	340652	BTS-4700	Voltage Divider
R103A	31000Ω	7	394043	AB-3000	Bias Network Wire Wound
B	15500Ω	7		AB-1500	Bias Network Wire Wound
R104	180Ω	1	370312	BW-1-180	Bias Network
R105	33Ω	‡	340132	BW-½-33	Bias Network
R106A	600Ω	6	394035	AB-600	Filter Wire Wound
B	330Ω	3		AB-350	Focus Coil Shunt Wire Wound
R107	1000Ω	‡	340492	BTS-1000	AGC Network
R108	1000Ω	‡	340492	BTS-1000	Decoupling

Note 1. Used only in chassis 120087B.
Note 2. Models using RF tuner 470320, 403 use 15KΩ resistor in this application. Models using RF tuner 470233 use 10KΩ resistor in this application.
Note 3. Some models use 470KΩ resistor in this application.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1A	117VAC	5VAC	6.3VAC		730015			
	⑥ .63A	⑥ 2A	⑥ 8.1A					
T1B					730007‡‡			

‡‡ Used in some models.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	3Ω	1.3Ω	738008	A-8110	A-3002		Hor. Block Osc. Trans
T3	150Ω	140Ω	738004	A-8121	A-4000	TB0-3	Vert.Block Osc. Trans
T4A	340Ω	SEC. 1	738015 §				Hor. Output Trans.
	Tap ⑥	8.4Ω					
	1752	Tap ⑥ .72Ω SEC. 2 02					
B			738000 or 738009	A-8117		TFB-1	Hor. Output Trans.

EMERSON MODELS 571, 606, 611, 612, 619, 620, 624, 627

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS) (CONT.)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T5	575Ω	7Ω	738010 or 738011	A-8116	A-3035	TSO-2	Vert. Output Trans.
T6A	14Ω		708130	DY-1			Hor. Deflection Coil
B	63Ω						Vert. Deflection Coil
T7A	250Ω		708141	FC-10			Focus Coil
B			708027				Focus Coil (Chassis 120091QD only.)

§ Used with chassis 120087D, 120091D, 120091QD, 120092D, 120107B for extended operation.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	4800Ω	3.2Ω	320Ω	.6Ω	734018	A-3849	A-2902	RO-9 #	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-110		
SP1A	PM	3.2Ω	180041	MOD.P6-V	6A15	
B	PM	3.2Ω	180050	ST-101 ① MOD.P12-T	12A4A	Models 619 and 620 (chassis 120091QD) ① Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	3/4"				
B	12"	1"				

COILS (RF-IF)

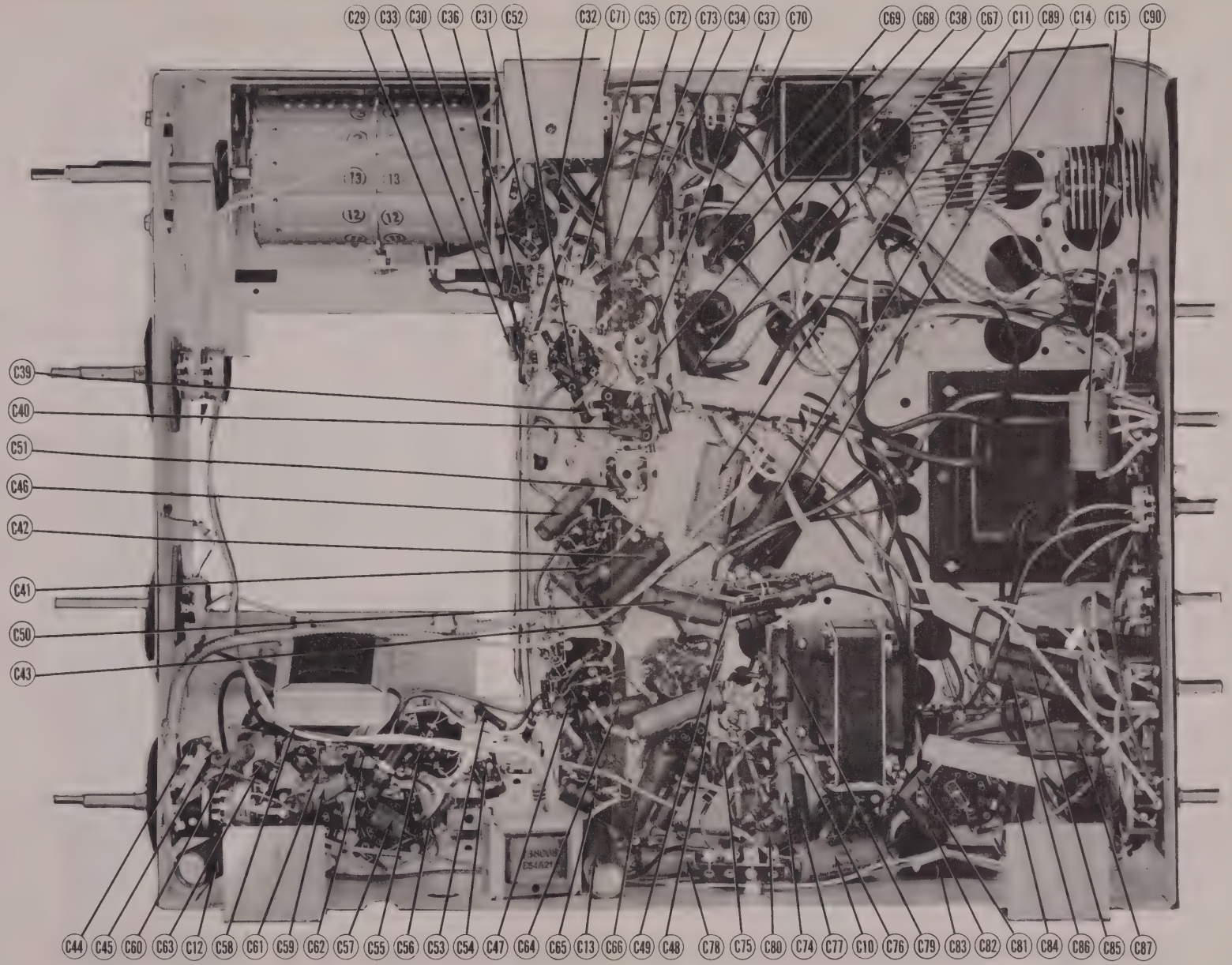
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	MEISSNER PART No.	NOTES
L1	Ant. Coil	0Ω				L1 and L3 are ordered by referring to tuner part number and channel number stamped on each section of turret.
L2	Fil. Choke	.1Ω				
L3	RF Mixer Grid & Osc.	0Ω				
L4	Fil. Choke	0Ω				
L5A	1st Video IF	.5Ω				
B	1st Video IF	.5Ω				
C	1st Video IF	.2Ω	.2Ω	720056		Not used in all models.
L6	2nd Video IF	.5Ω	.1Ω	720042		
L7	3rd Video IF	.5Ω		720073		
L8	IF Grid	2.5Ω		705014		Inductance-20 microhenries
L9	4th Video IF	.1Ω		720057		
L10	Peaking	5.4Ω		708096		Inductance-75 microhenries
L11	Peaking	9.5Ω		708095		Inductance-180 microhenries
L12	Peaking	10Ω		708095		Inductance-180 microhenries
L13	Sound Take-Off	4.5Ω		708097		Inductance-45 microhenries
L14	Sound IF	2Ω	2Ω	720081		
L15	Disc. Trans.	1.9Ω	1.9Ω	708017		Alternate part No. 708018
L16	RF Choke	56Ω		705009		Inductance-3 millihenries
L17	Hor. Size	.5Ω		708082		
L18	Horiz. Linearity	35Ω		708003		

SELENIUM RECTIFIER

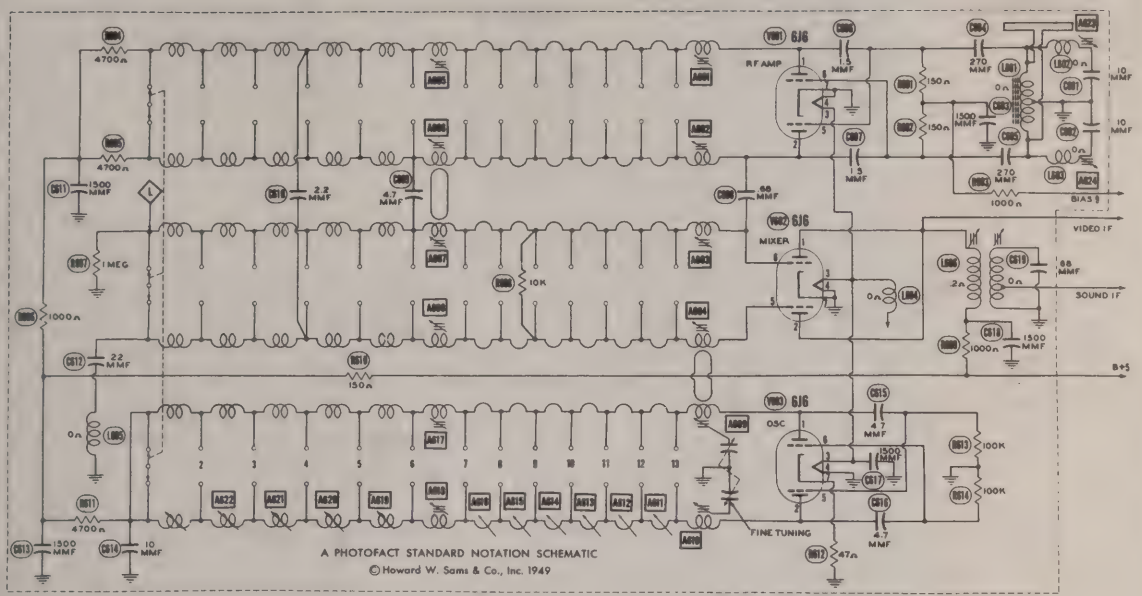
ITEM No.	RATING CURRENT	REPLACEMENT DATA EMERSON PART No.	SYLVANIA PART NO.		NOTES
M1	.215A	817004	NF-5		
M2	.215A	817004	NF-5		
M3	.136A	817005	ND-5		
M4	.136A	817005	ND-5		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M5	RF Tuner	470452	
M6	Fuse	808050	Type AGC .25A
M7	Ion Trap	708084	PM Alternate Part No. 708075
M8	Ballast Tube	397023	
	Cabinet	140205	Models 606 and 571
	Cabinet	140234	Model 606 Mahogany
	Cabinet	140264	Model 611 blonde
	Cabinet	140240A	Model 612
	Cabinet	140281	Model 624 Mahogany
	Cabinet Back	560059	Model 606
	Cabinet Back	560071	Model 611
	Cabinet Back	560072	Model 612
	Cabinet Back	560083	Model 624
	Safety Glass	635010	Model 606
	Safety Glass	635011	Model 611
	Safety Glass	635018	Model 612
	Knob	450036	Fine Tuning
	Knob	450037	Channel Selector with Hole
	Knob	450031	Channel Selector
	Knob	450032	Dual Large
	Knob	450034	Dual Small
	Knob	450035	Dual Small



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RF TUNER

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: STANDARD REPLACEMENT	REPLACEMENT DATA: RMA BASE TYPE	
V601	R. F. Amp.	6J6	7BF	
V602	Mixer	6J6	7BF	
V603	Oscillator	6J6	7BF	

CAPACITORS

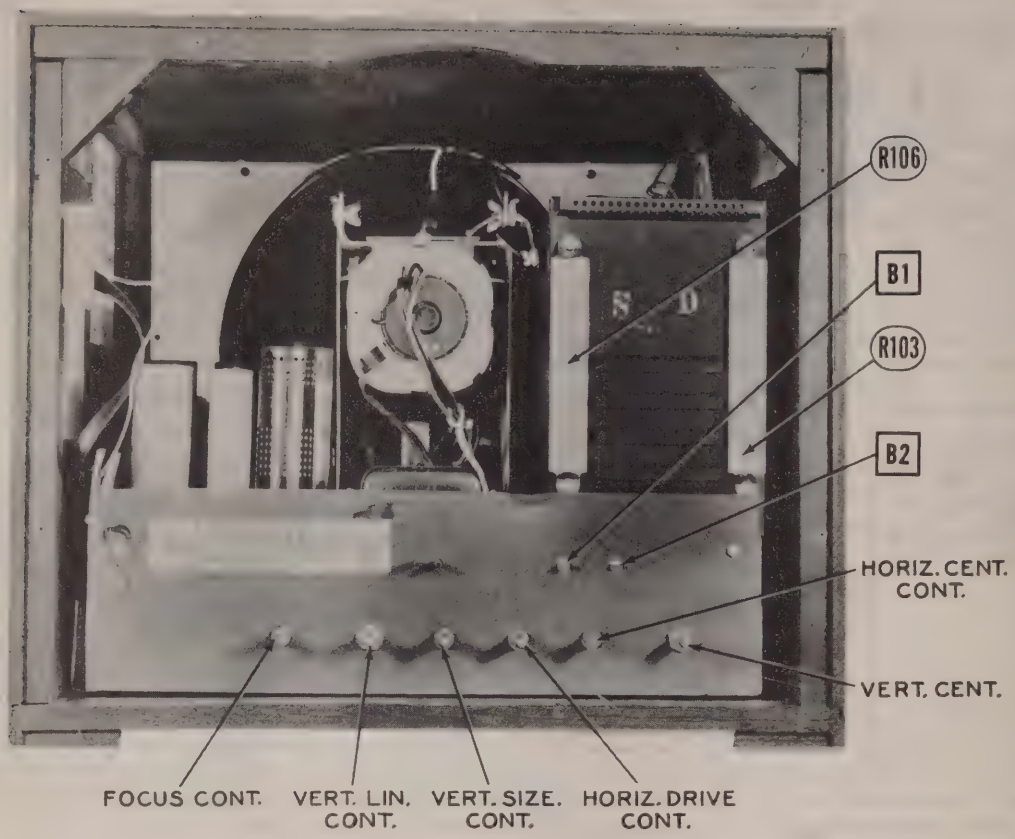
ITEM No.	RATING: CAP.	RATING: VOLT	IDENTIFICATION
C601	10		Fixed Trimmer
C602	10		Fixed Trimmer
C603	1500		RF Bypass
C604	270		RF Coupling
C605	270		RF Coupling
C606	1.5		Neutralizing
C607	1.5		Neutralizing
C608	.68		RF Coupling
C609	4.7		RF Coupling
C610	2.2		RF Coupling
C611	1500		RF Decoupling
C612	22		Fixed Trimmer
C613	1500		Osc. Decoupling
C614	10		Fixed Trimmer
C615	4.7		Osc. Feedback
C616	4.7		Osc. Feedback
C617	1500		Filament Bypass
C618	1500		Mixer Decoupling
C619	68		Fixed Trimmer

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	IDENTIFICATION
R601	150Ω	½	RF Grid
R602	150Ω	½	RF Grid
R603	1000Ω	½	Bias Filter
R604	4700Ω	½	RF Plate
R605	4700Ω	½	RF Plate
R606	1000Ω	½	RF Decoupling
R607	1 Meg.	½	Mixer Grid
R608	10KΩ	½	Mixer Grid Shunt
R609	1000Ω	½	Mixer Decpupling
R610	150Ω	½	Decoupling
R611	4700Ω	½	Osc. Plate
R612	47Ω	½	Osc. Cathode
R613	100KΩ	½	Osc. Grid
R614	L00KΩ	½	Osc. Grid

COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	
L601	Ant. Input	0Ω		
L602	Interference Trap	0Ω		
L603	Interference Trap	0Ω		
L604	Filament Choke	0Ω		
L605	Mixer Grid Trap	0Ω		
L606	1st. Video IF and Sound Trap	.2Ω	0Ω	



CABINET—REAR VIEW

HORIZONTAL OSCILLATOR ADJUSTMENT

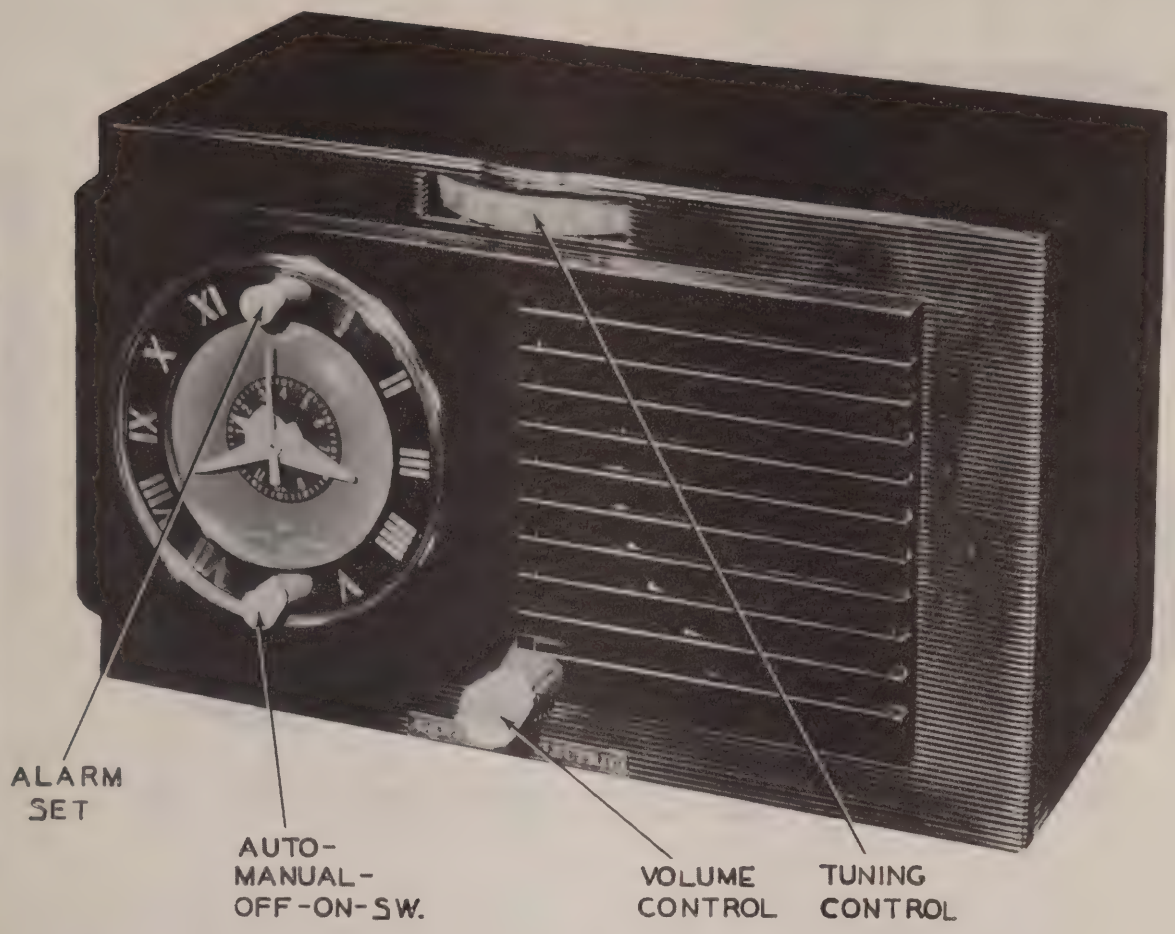
Turn the horizontal drive control clockwise as far as possible without distorting the test pattern seriously.

Adjust the horizontal width adjustment (B1) so the test pattern fills the mask horizontally. Readjustment of the horizontal drive control may be necessary.

Turn the horizontal linearity adjustment (B2) until the pattern is symmetrical in the horizontal plane.

The three adjustments mentioned above are interacting and should be adjusted alternately for best results.

GENERAL ELECTRIC
MODELS 66, 67



GENERAL ELECTRIC
MODELS 66, 67

GENERAL ELECTRIC MODEL 66

TRADE NAME	General Electric, Models 66, 67
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50C5 Power Output, 35W4 or 35Z5GT Rectifier
POWER SUPPLY	105-120 Volts AC — RATING: .28 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 8 (Grid) of 12SA7 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC (400~ Mod.)	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for maximum output	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: G. E. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Power Output	50C5	50C5	7CV	
V5A	Rectifier	35W4	35W4	5BQ	Used in late production.
B	Rectifier	35Z5GT	35Z5GT	6AD	Used in early production.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: G. E. PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	RCE-050	PR3A150/50-50	EDL5515		TA-505	Filter
B	50	150						Filter
C2	.05	400	UCC-028	P488-05	GT4S5		TM-15	AVC Filter
C3	.05	400	UCC-028	P488-05	GT4S5		TM-15	Line Isolation
C4	47		RCW-1043	1468-00005	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap.
C5	.05	400	UCC-028	P488-05	GT4S5		TM-15	RF Bypass
C6A	220		RCW-3013	1468-00025	5W5T25	GP2K-220	1FM-325	RF Bypass
B	220			1468-00025	5W5T25	GP2K-220	1FM-325	AF Plate Bypass
C	2000			1467-002	1W5D2	GP2M-002	1FM-22	Audio Coupling
D	5000			1467-005	1D5D5	GP2M-005	1FM-25	Audio Coupling
C7	.003	600	RCC-074	P688-003	GT6D3	GP2M-003	TM-23	Output Plate Bypass
C8	.05	600	RCC-045	P688-05	GT6S5		TM-15	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: G. E. PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½	RRC-054	Q13-133	15/16-60-Z	Volume Control

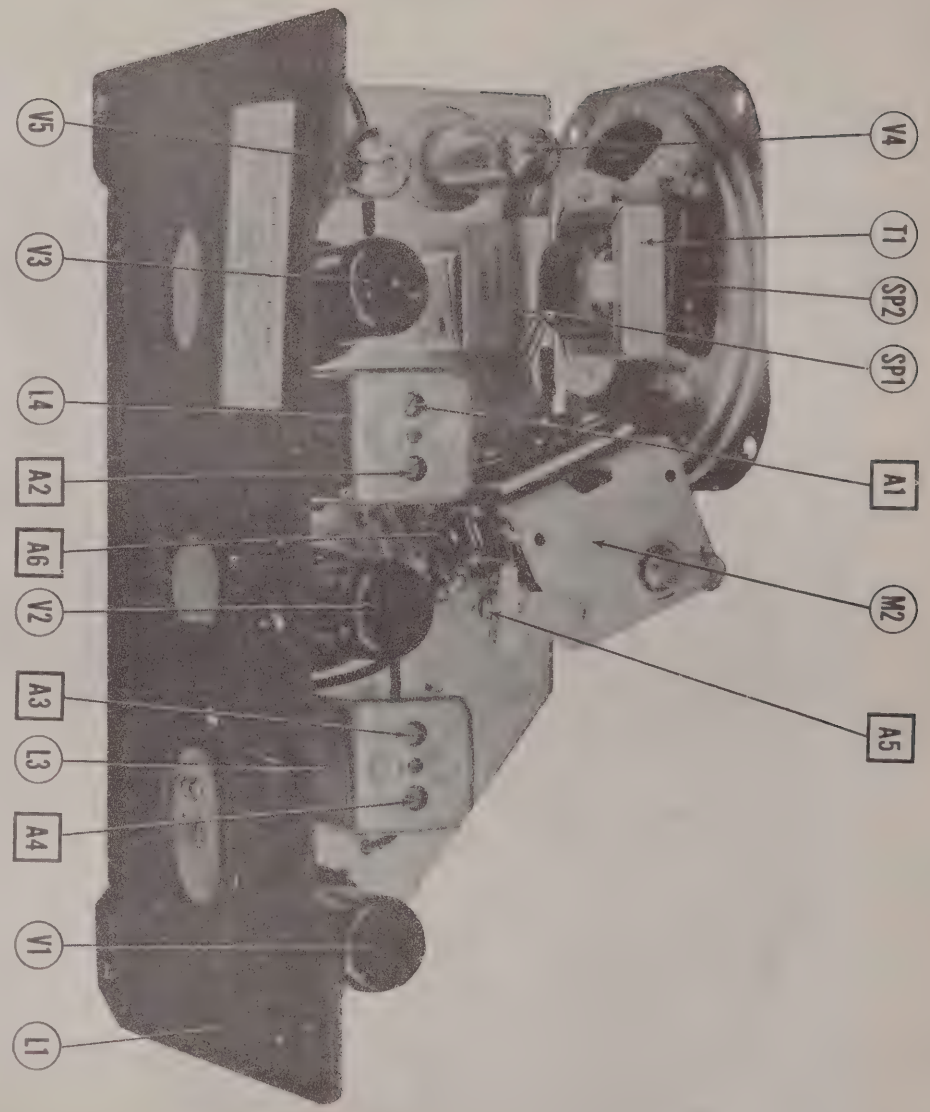
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: G. E. PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	URD-081	BTS-22K	Osc. Grid
R3	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	AVC Network
R4	6.8 Meg.	½	URD-141	BTS-6.8 Meg.	AF Grid
R5	470KΩ	½	URD-113	BTS-470K	AF Plate
R6	470KΩ	½	URD-113	BTS-470K	Output Grid
R7	150Ω	½	URD-029	BW-½-150	Output Cathode
R8	1500Ω	2	URE-053	BW-2-1500	Filter
R9	22Ω	½	URD-009		Surge Limiter
R10	470KΩ	½	URD-113	BTS-470K	Isolation

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: G. E. PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T1	3000Ω	4Ω	270Ω Tap @ 12Ω	.5Ω	RTO-036	A-3330 ‡	A-3031	RO-3	‡ Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA G. E. PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113 †		
SP1	PM	4Ω	U0P-421	MOD.P4-X	4A07 †	† Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

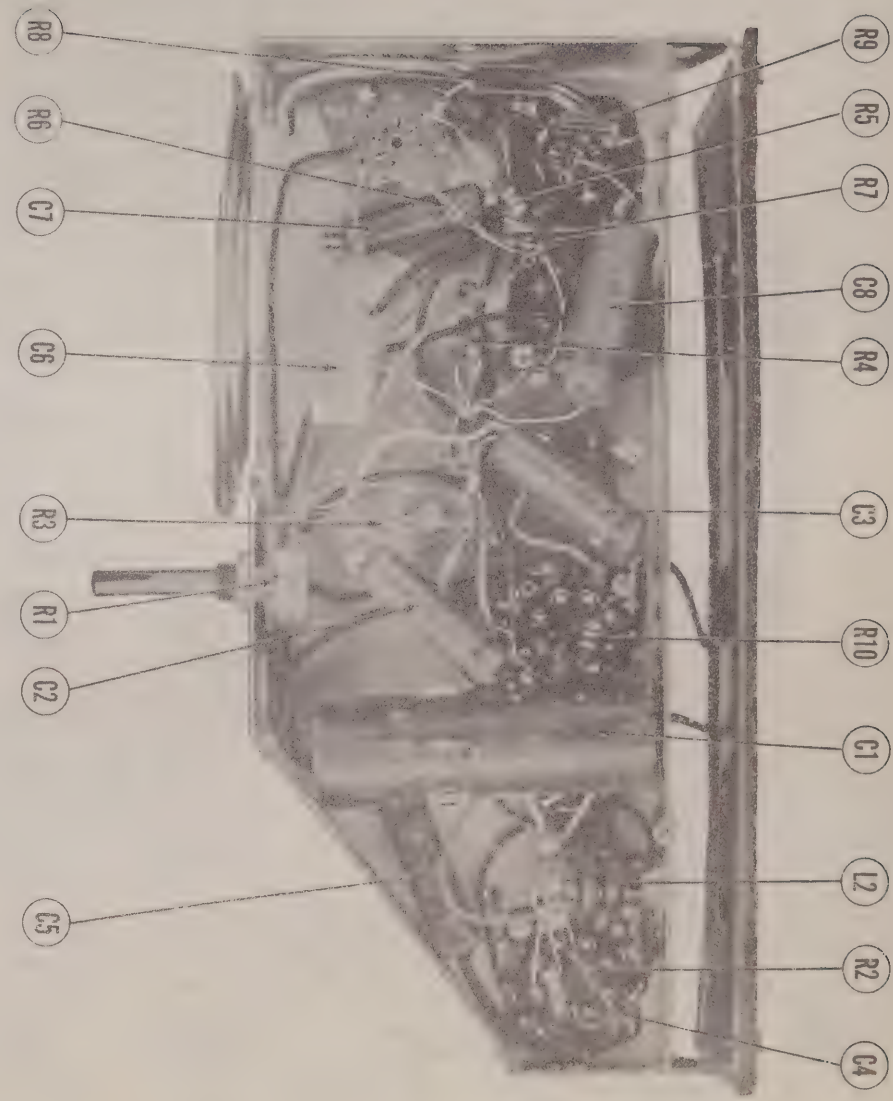
R F COILS

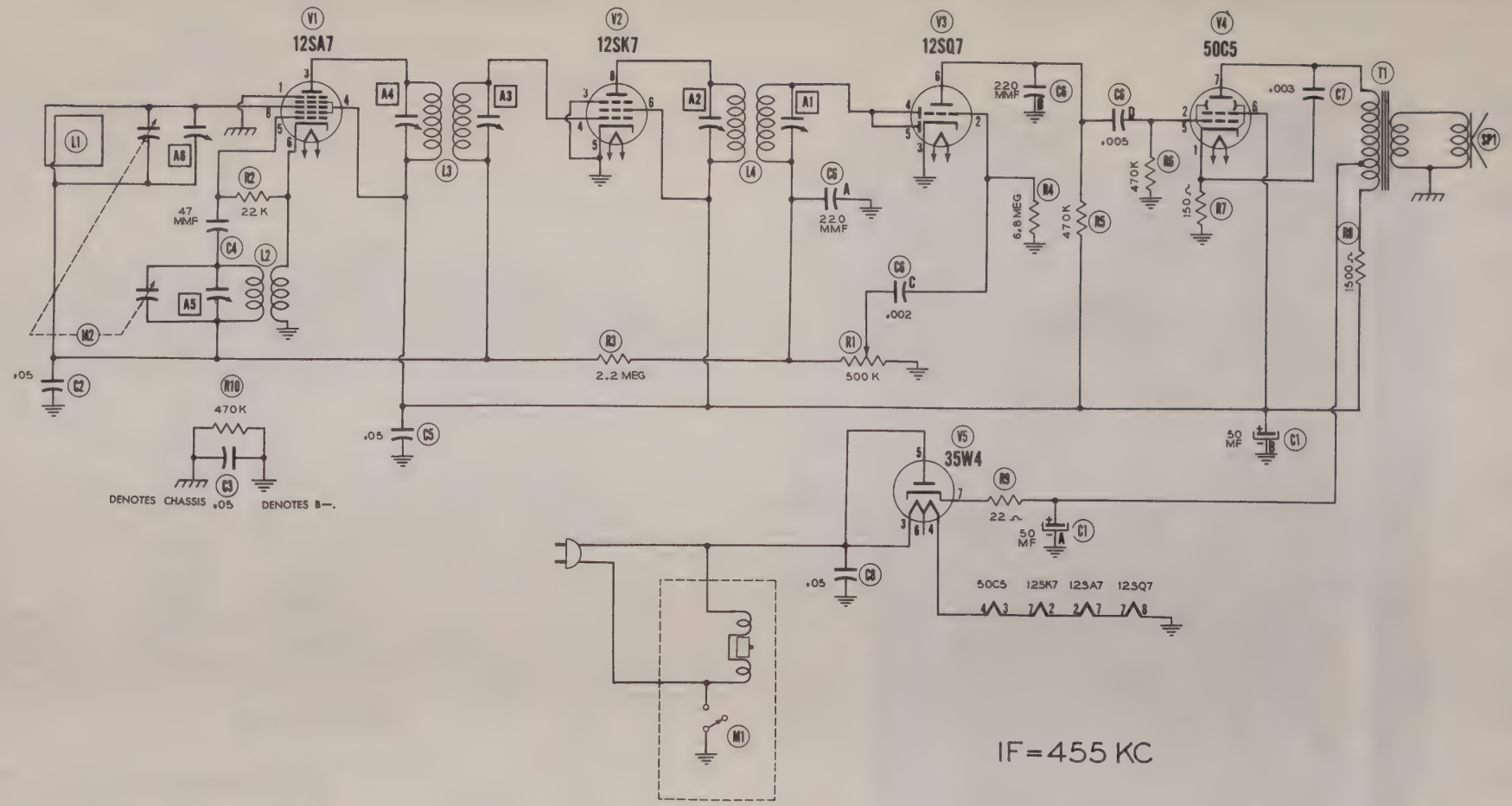
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	.1Ω	2.2Ω	RAB-054	
L2	Osc. Coil	.6Ω	7Ω	RLC-051	14-1060
L3	Input IF	25.5Ω	25.5Ω	RTL-094	16-6658
L4	Output IF	25Ω	25Ω	RTL-095	16-6660

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M1	Switch	XC40X7	Auto-Off-Manual
M2	2 Gang. Var. Cap.	RCT-021	(23-466MMF, 21-148MMF)
	Dial Scale	RDS-047	Model 66
	Dial Scale	RDS-050	Model 67
	Knob	RDK-028	Volume
	Knob	RDK-094	Tuning
	Cabinet	RAU-020	Model 66
	Cabinet	RAU-021	Model 67
	Clock	RZC-005	

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	24VAC	85VDC	82VDC	§-6.7VDC	0V	12VAC	-.1VDC
V 2	12SK7	0V	24VAC	0V	0V	0V	82VDC	37VAC	82VDC
V 3	12SQ7	0V	-.6VDC	0V	-.5VDC	-.5VDC	45VDC	12VAC	0V
V 4	50C5	6.7VDC	.2VDC	37VAC	85VAC	.2VDC	85VDC	117VDC	
V 5	35W4	125VDC	126VDC	117VAC	85VAC	117VAC	92VAC	127VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	470KΩ	24Ω	†1.5KΩ	†1.5KΩ	22KΩ	1Ω	12Ω	3 Meg.
V 2	12SK7	470KΩ	24Ω	0Ω	3 Meg.	0Ω	†1.5KΩ	36Ω	†1.5KΩ
V 3	12SQ7	470KΩ	6.8 Meg.	0Ω	500KΩ	500KΩ	†470KΩ	12Ω	0Ω
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	1.5KΩ	1300Ω	†1.5KΩ
V 5	35W4	†22Ω	60KΩ	120Ω	85Ω	120Ω	100Ω	60KΩ	

† Measured from pin 7 of V5.

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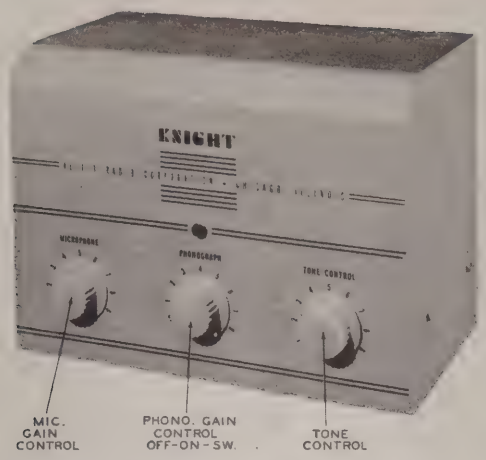
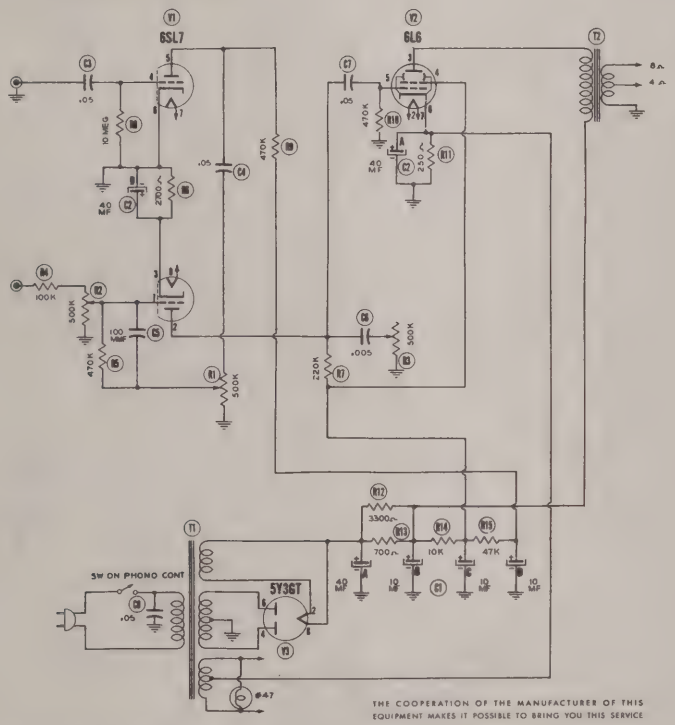
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



KNIGHT MODEL 93-350

TRADE NAME	Knight, Model 93-350
SUPPLIER	Allied Radio Corp., 833 West Jackson Blvd., Chicago 7, Illinois
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (THREE)	Types 6SL7GT AF Amp., 6L6 Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING: .57 Amp. @ 117 Volts AC



Pin No.	6SL7GT Volt	6SL7GT Res.	6L6 Volt	6L6 Res.
1	0V	500KΩ	0V	0Ω
2	130VAC	1230KΩ	#	250Ω
3	1.9VDC	2.7KΩ	300VDC	190Ω
4	-.1VDC	10 Meg.	280VDC	110KΩ
5	55VDC	150KΩ	.1VDC	470KΩ
6	0V	0Ω	0V	14Ω
7	#	250Ω	#	250Ω
8	#	250Ω	19.5VDC	250Ω

Pin No.	5Y3GT Volt	5Y3GT Res.
1	0V	Inf.
2	375VDC	50KΩ
3	0V	Inf.
4	360VAC	21Ω
5	0V	Inf.
6	360VAC	23Ω
7	0V	Inf.
8	375VDC	50KΩ

6.3VAC measured across filament.
† Measured from pin 8 of V3.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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76-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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DATE 11/49 SET #76 FOLDER 13

KNIGHT
MODELS 93-350

KNIGHT
MODELS 93-350

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	6SL7GT	6SL7GT	8BD	
V2	Power Output	6L6	6L6	7AC	
V3	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AF2222J*	UP111145		TVL-40	● Filter
B	10	450		PRS450/30	BR3045*			■ Filter
C	10	450						▲ Decoupling
D	10	450						Decoupling
C2A	40	25		PRS150/40-	BR505		TA-440	Output Cathode Bypass
B	40	25		40	BR505			Audio Cathode Bypass
C3	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C4	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C5	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	Tone Compensation
C6	.005	600		P688-005	GT6D5		TM-25	Tone Compensation
C7	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C8	.05	400		P488-05	GT4S5		TM-15	Line Filter

* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½	RP-504B	Q13-133	15/16-60-Z	Microphone Volume Control
R2A	500KΩ	½	RP-504W	Q13-133	15/16-60-Z	Phono Volume Control
B	Switch			76-1 ǂ	Switch 8PST †	
R3	500KΩ	½	RP-504B	Q13-133	15/16-60-Z	Tone Control

ǂ Attach to R2A per instructions.
† Attached at factory.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
R4	100KΩ	½		BTS-100K	Tone Compensation
R5	470KΩ	½		BTS-470K	AF Grid
R6	2700Ω	½		BTS-2700	AF Cathode
R7	220KΩ	½		BTS-220K	AF Plate
R8	10 Meg.	½		BTS-10 Meg.	AF Grid
R9	470KΩ	½		BTS-470K	AF Plate
R10	470KΩ	½		BTS-470K	Output Grid
R11	250Ω	10		AB-250	Output Cathode Wire Wound
R12	3300Ω	1		BW-1-3300	Filter
R13	700Ω	10		AB-700	Filter Wire Wound
R14	10KΩ	1		BTA-10K	Filter
R15	47KΩ	½		BTS-47K	Filter

TRANSFORMER (POWER)

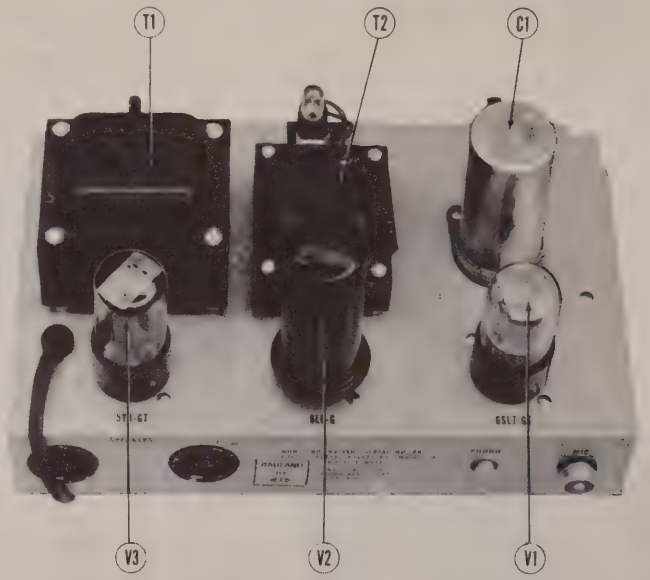
ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .57A	730VCT .075ADC	5VAC @ 2A	6.3VAC @ 1.4A	LP-0208	P-6011	P-2952 ǂ	PH-70B

ǂ Drill new mounting holes.

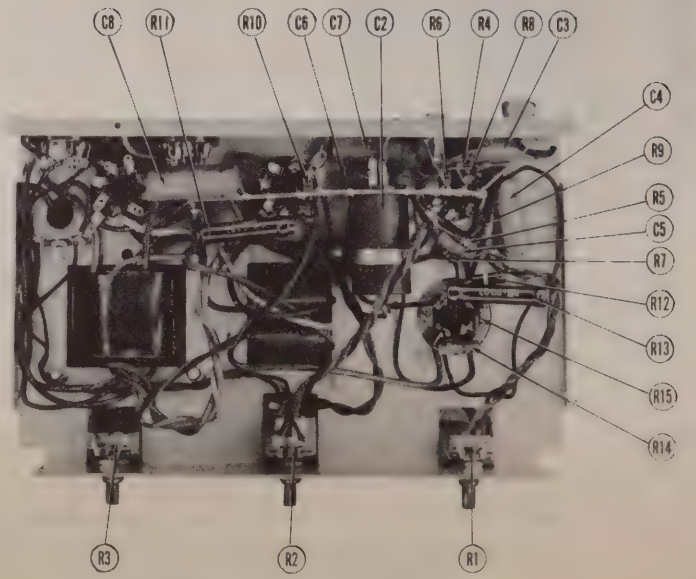
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	5300Ω	4Ω 8Ω	380Ω	.7Ω 1Ω	LO-0118	A-3872 ǂ	A-3028ǂ		ǂ Drill new mounting holes.

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



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MECK
MODEL XL750

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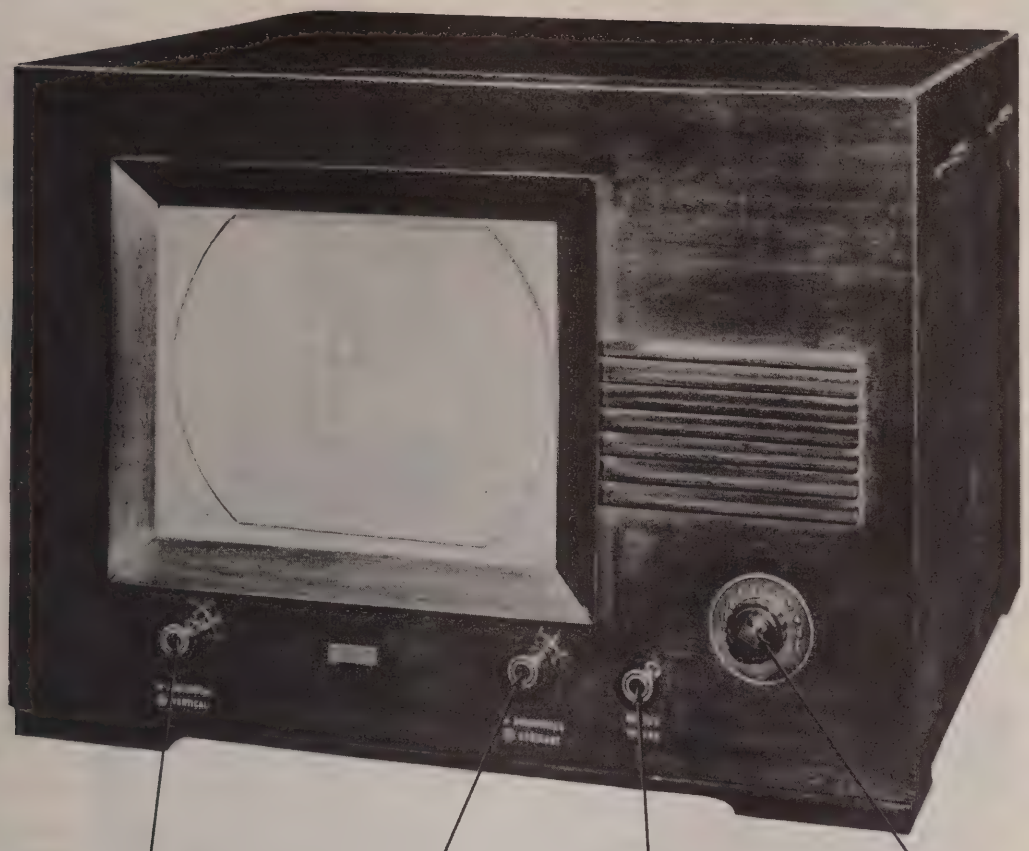
MECK
MODEL XL750



MECK
MODEL XL750

TRADE NAME Meck, Model XL-750
MANUFACTURER John Meck Industries, Plymouth, Indiana
TYPE SET Television Receiver
TUBES Twenty

POWER SUPPLY 110-120 Volts AC-60 Cycles
TUNING RANGE—Channels 2 thru 13 RATING 1.7 Amp. @ 117 Volts AC

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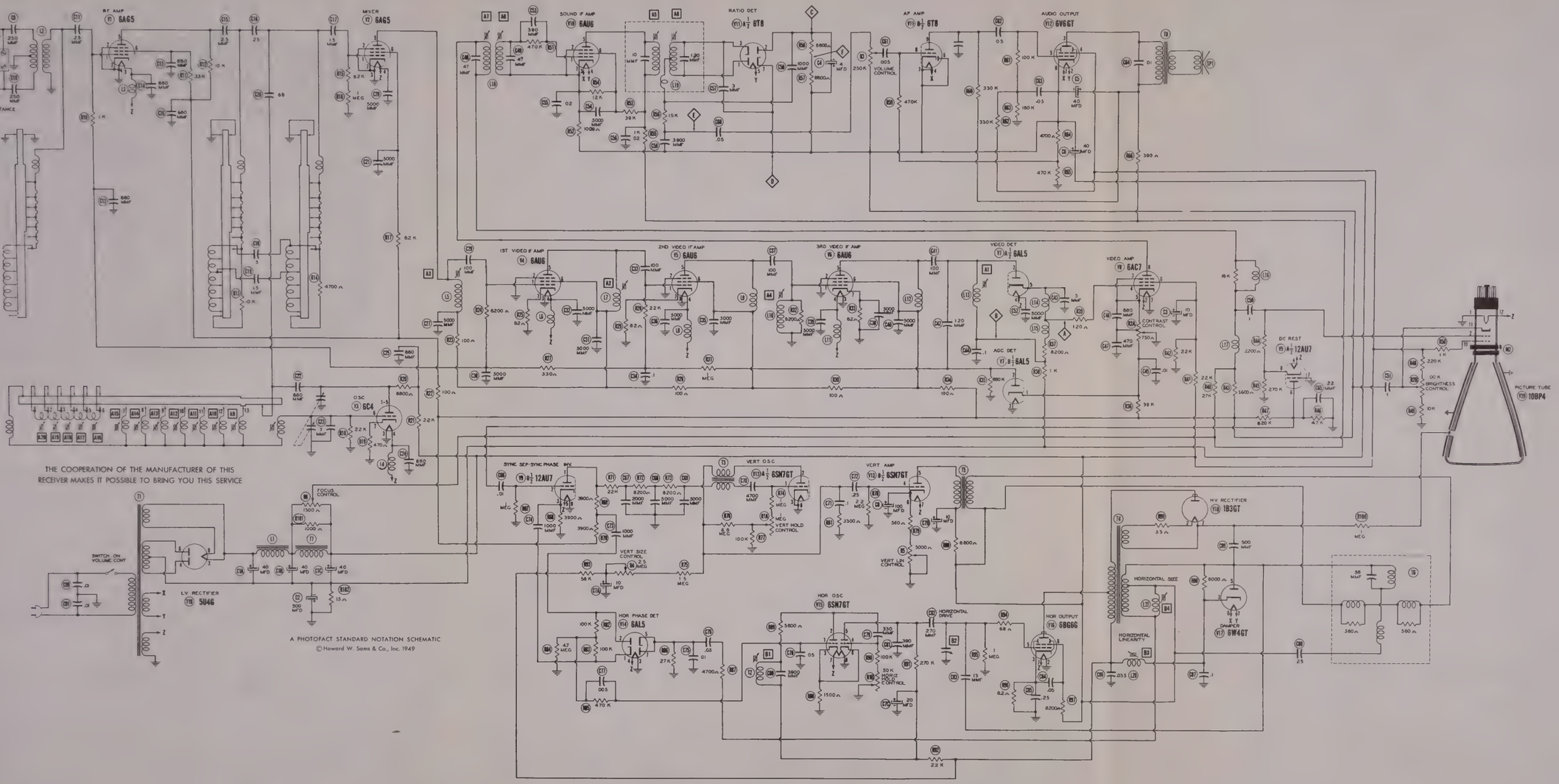
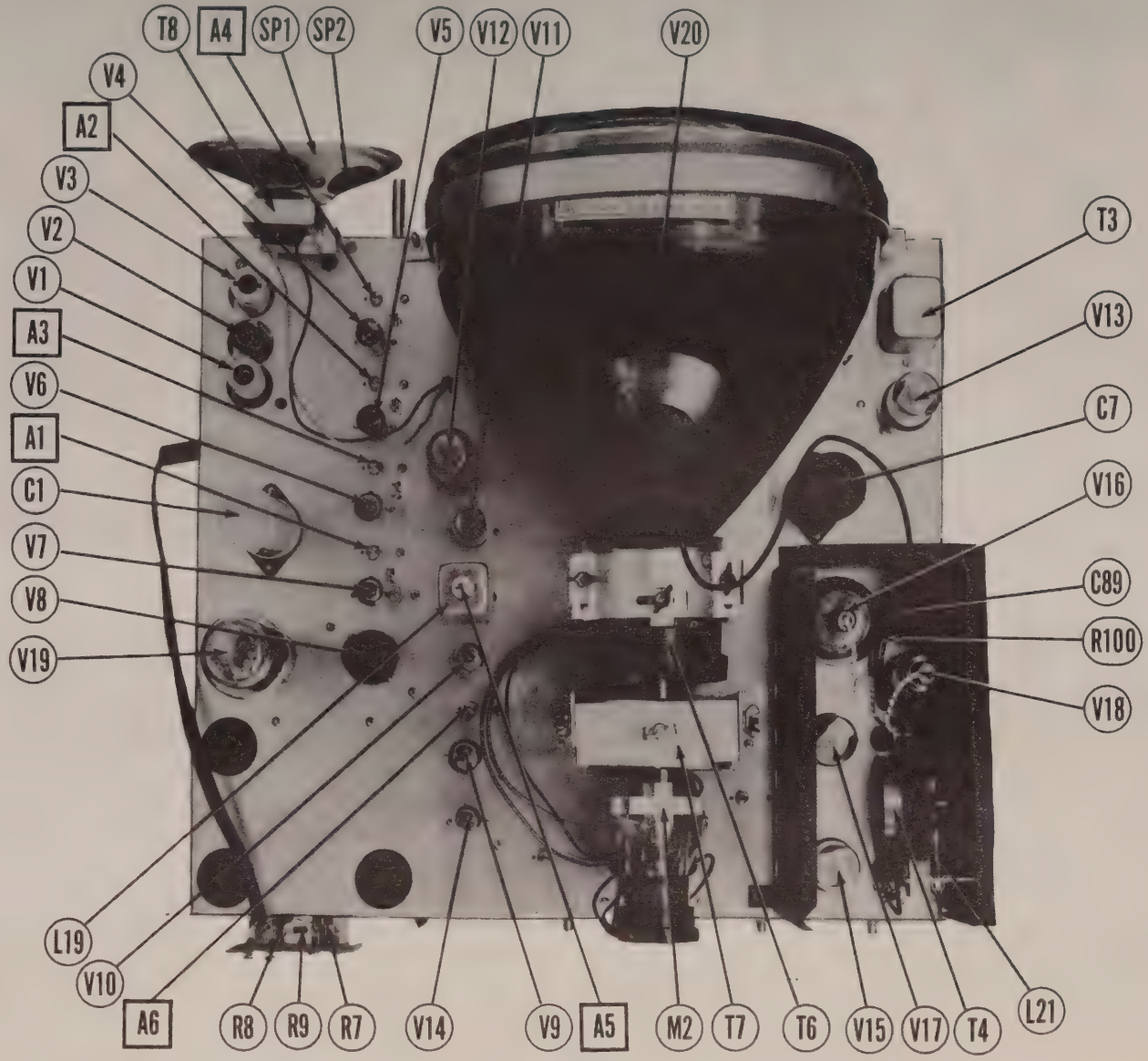
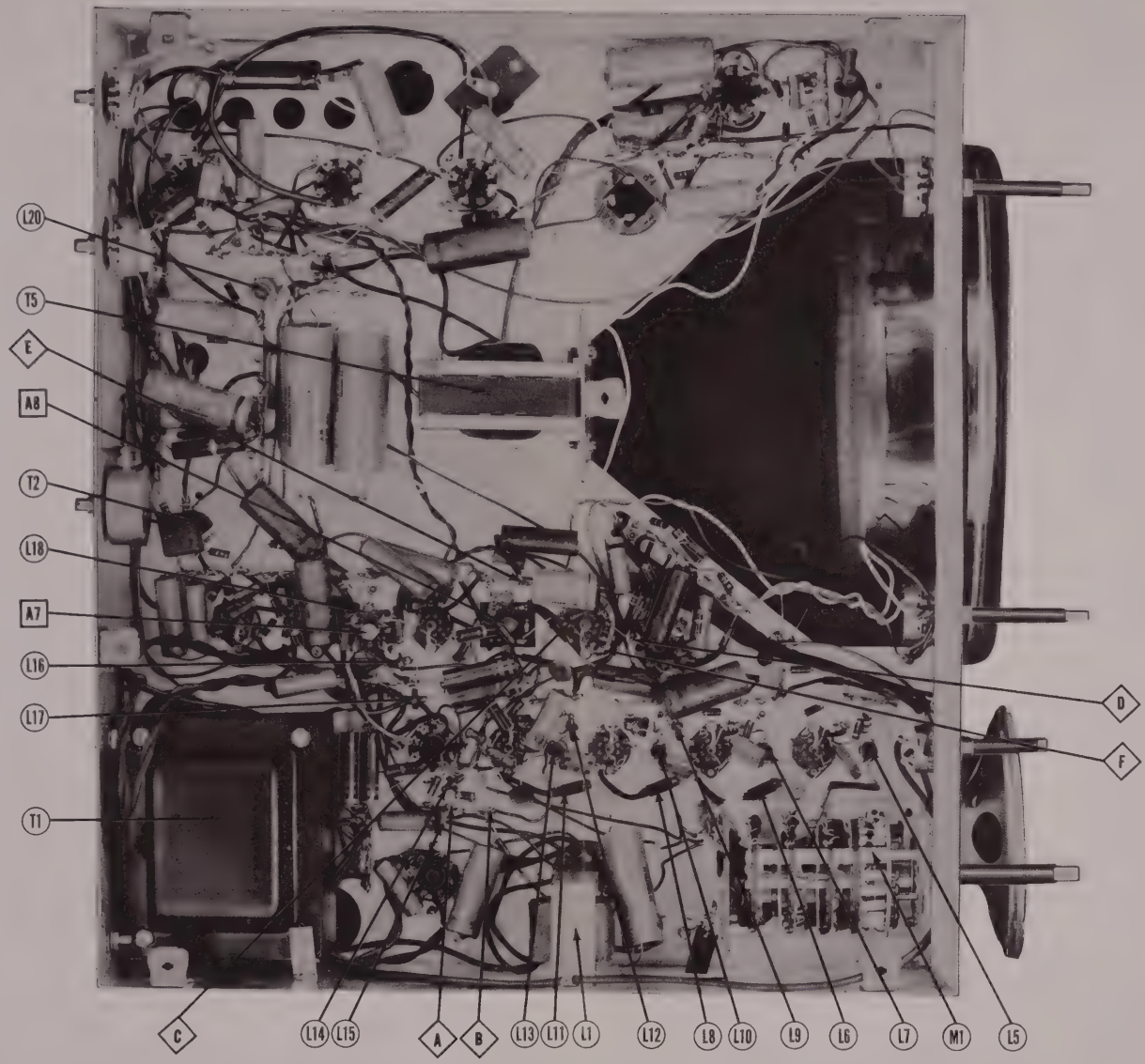


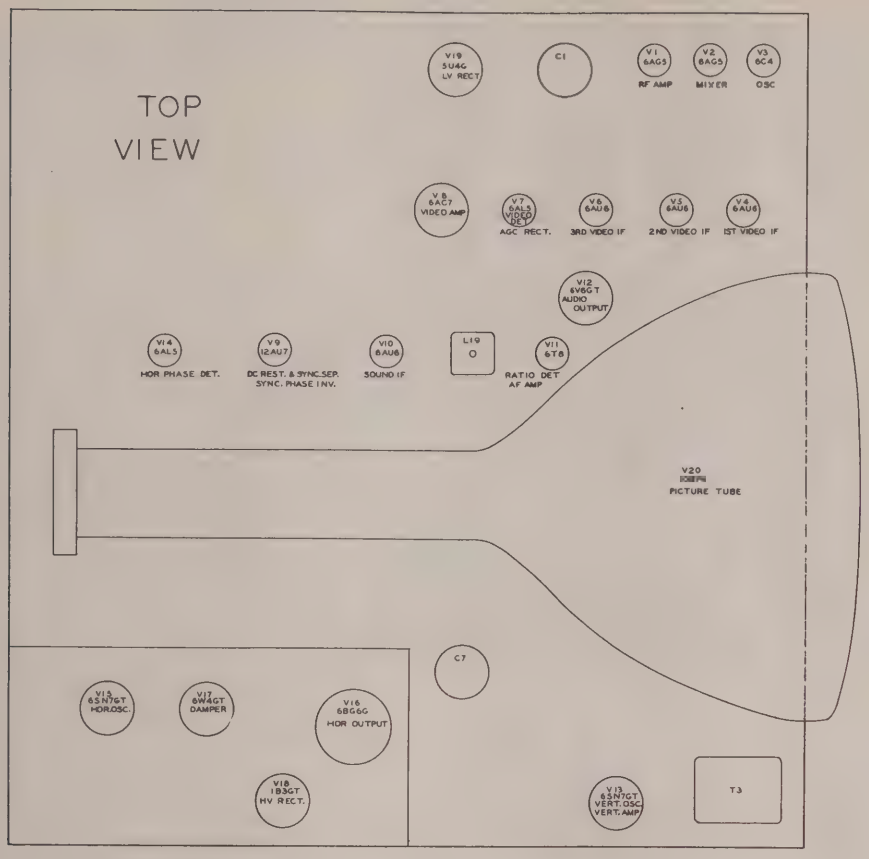
MECK
MODEL XL750

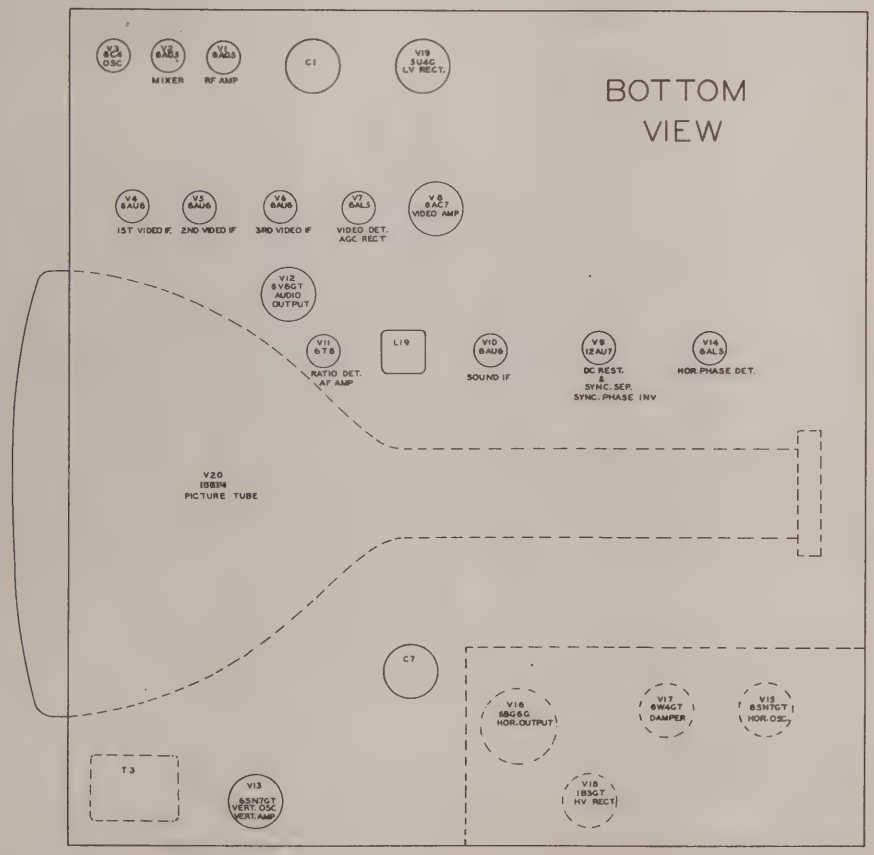


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If set is to be aligned with picture tube removed, remove the horizontal oscillator tube (V15) to remove high voltage shock hazard.

VIDEO IF ALIGNMENT

Remove local oscillator tube V3 to prevent erroneous indications.
Keep contrast control as low as possible to get an indication on VTVM (Approximately 2 volts).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25.6MC (Unmod.)	Any	DC Probe to Point (A) Common to Point (B)	A1,A2	Adjust for maximum deflection.
2.		"	23.3MC	"	"	A3,A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.		High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC Sweep)	23.3MC 25.6MC	Any	Vert. Amp. to Point (A) Low side to chassis.		Check for response curve as per Fig 1. with markers as shown. If necessary slightly retouch A1, A2, A3, A4 for proper response.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C) Common to Point (D)	A5,A6, A7	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (E) Common to Point (F)	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

OSCILLATOR ALIGNMENT

RF and mixer lines are pre-set at the factory and should not require adjustment in the field.
Replace local oscillator tube V3. Set the fine tuning control to mid-position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. to Point (A) Low side to chassis.	A9	Check for proper response as per Fig 2. Since the oscillator circuits for each channel are individually tuned, only those channels requiring alignment need be adjusted.
			207MC (10MC Sweep)	205.25MC 209.75MC	12		A10	
			201MC (10MC Sweep)	199.25MC 203.75MC	11		A11	
			193MC (10MC Sweep)	191.25MC 195.75MC	10		A12	
			189MC (10MC Sweep)	187.25MC 191.75MC	9		A13	
			183MC (10MC Sweep)	181.25MC 185.75MC	8		A14	
			177MC (10MC Sweep)	175.25MC 179.75MC	7		A15	
			85MC (10MC Sweep)	83.25MC 87.75MC	6		A16	
			79MC (10MC Sweep)	77.25MC 81.75MC	5		A17	
			69MC (10MC Sweep)	67.25MC 71.75MC	4		A18	
			63MC (10MC Sweep)	61.25MC 65.75MC	3		A19	
			57MC (10MC Sweep)	55.25MC 59.75MC	2		A20	

FIG. 1

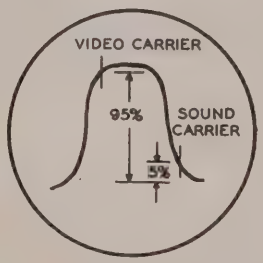
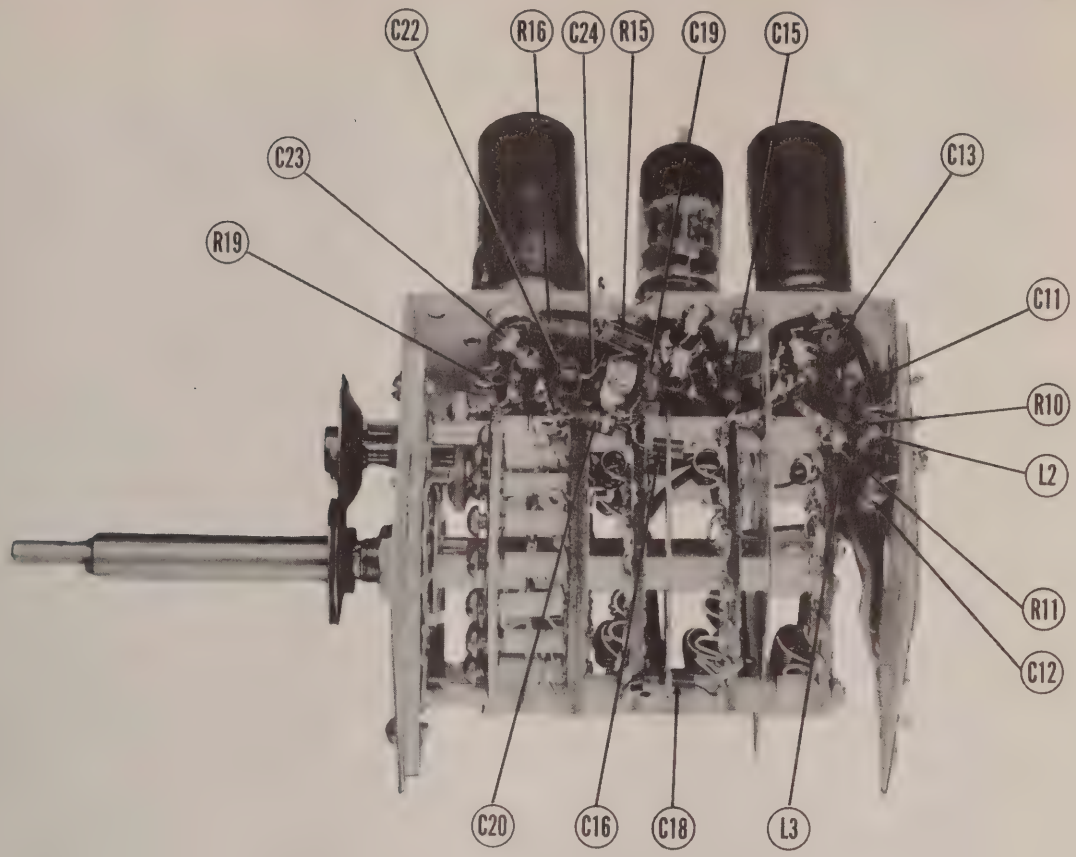
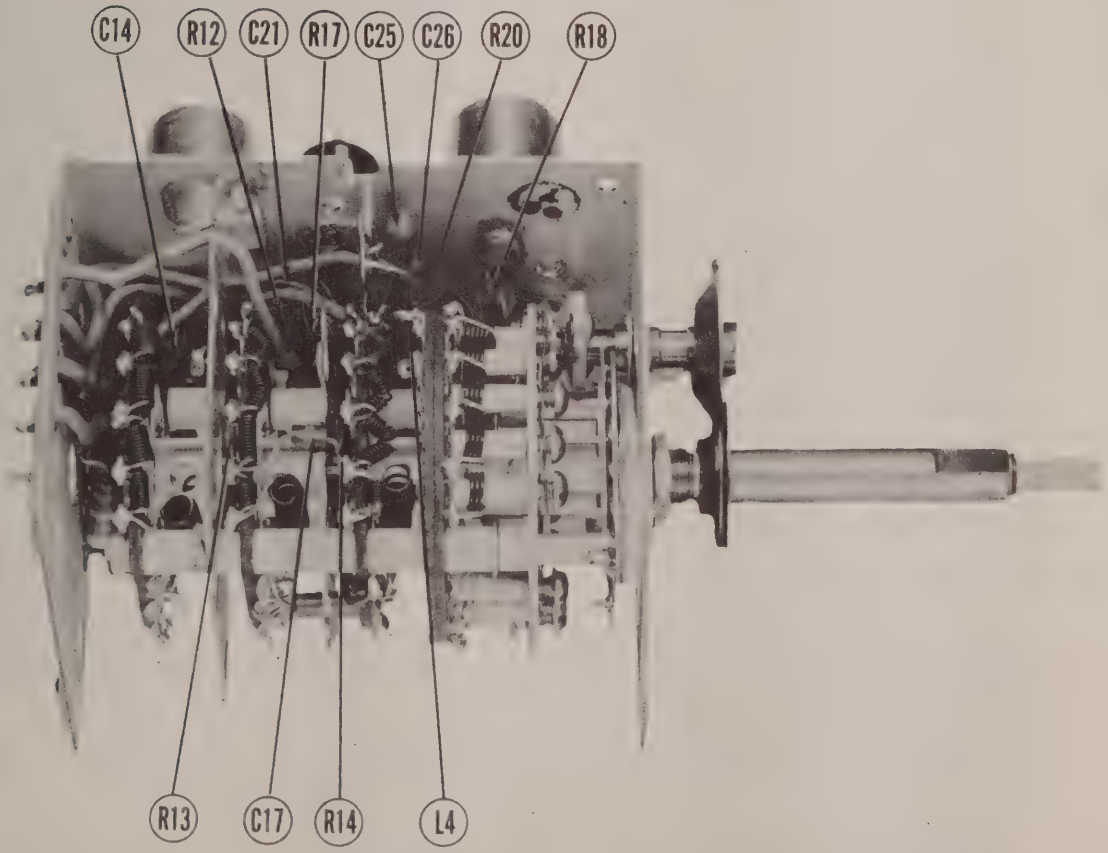


FIG. 2



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.5VDC	0V	6.3VAC	0V	125VDC	85VDC	0V		
V 2	6AG5	-1.2VDC	0V	0V	6.3VAC	140VDC	75VDC	0V		
V 3	6C4	150VDC	0V	0V	6.3VAC	150VDC	§-.7 VDC	4.2VDC		
V 4	6AU6	-.4VDC	0V	0V	6.3VAC	135VDC	135VDC	.8VDC		
V 5	6AU6	-.4VDC	0V	0V	6.3VAC	135VDC	135VDC	.8VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	140VDC	140VDC	1VDC		
V 7	6AL5	.1VDC	-3VDC	0V	6.3VAC	-2.8VDC	0V	-.4VDC		
V 8	6AC7	0V	6.3VAC	1VDC	-2.7VDC	1VDC	175VDC	0V	170VDC	
V 9	12AU7	125VDC	0V	6.2VDC	6.3VAC	6.3VAC	5.2VDC	0V	1VDC	0V
V 10	6AU6	†1.2VDC	†6.6VDC	† 0V	†6.3VAC	†220VDC	†50VDC	†6.6VDC		
V 11	6T8	†-.5VDC	†-.8VDC	†-.5VDC	† 0V	†6.3VAC	† 0V	† 0V	†-.7VDC	†90VDC
V 12	6V6GT	† 0V	†6.3VAC	†210VDC	†225VDC	†-12VDC	0V	† 0V	† 0V	
V 13	6SN7GT	-24VDC	70VDC 145VDC	0V	0V	300VDC	5VDC 21VDC	6.3VAC	0V	
V 14	6AL5	1.2VDC	-1.2VDC	0V	6.3VAC	0V	0V	0V		
V 15	6SN7GT	.3VDC	250VDC	10VDC	-3.2VDC	100VDC	10VDC	6.3VAC	0V	
V 16	6BG6G	.1VDC	0V	9.6VDC	0V	.1VDC	0V	6.3VAC	260VDC	TOP CAP *
V 17	6W4GT	0V	0V	430VDC	0V	360VDC	0V	†6.3VAC	† 0V	
V 18	1B3GT	* DO NOT MEASURE.								
V 19	5U4G	0V	400VDC	0V	390VAC	0V	390VAC	0V	400VDC	
V 20	10BP4	0V	1VDC	PIN 10 360VDC	PIN 11 120VDC	PIN 12 6.3VAC				

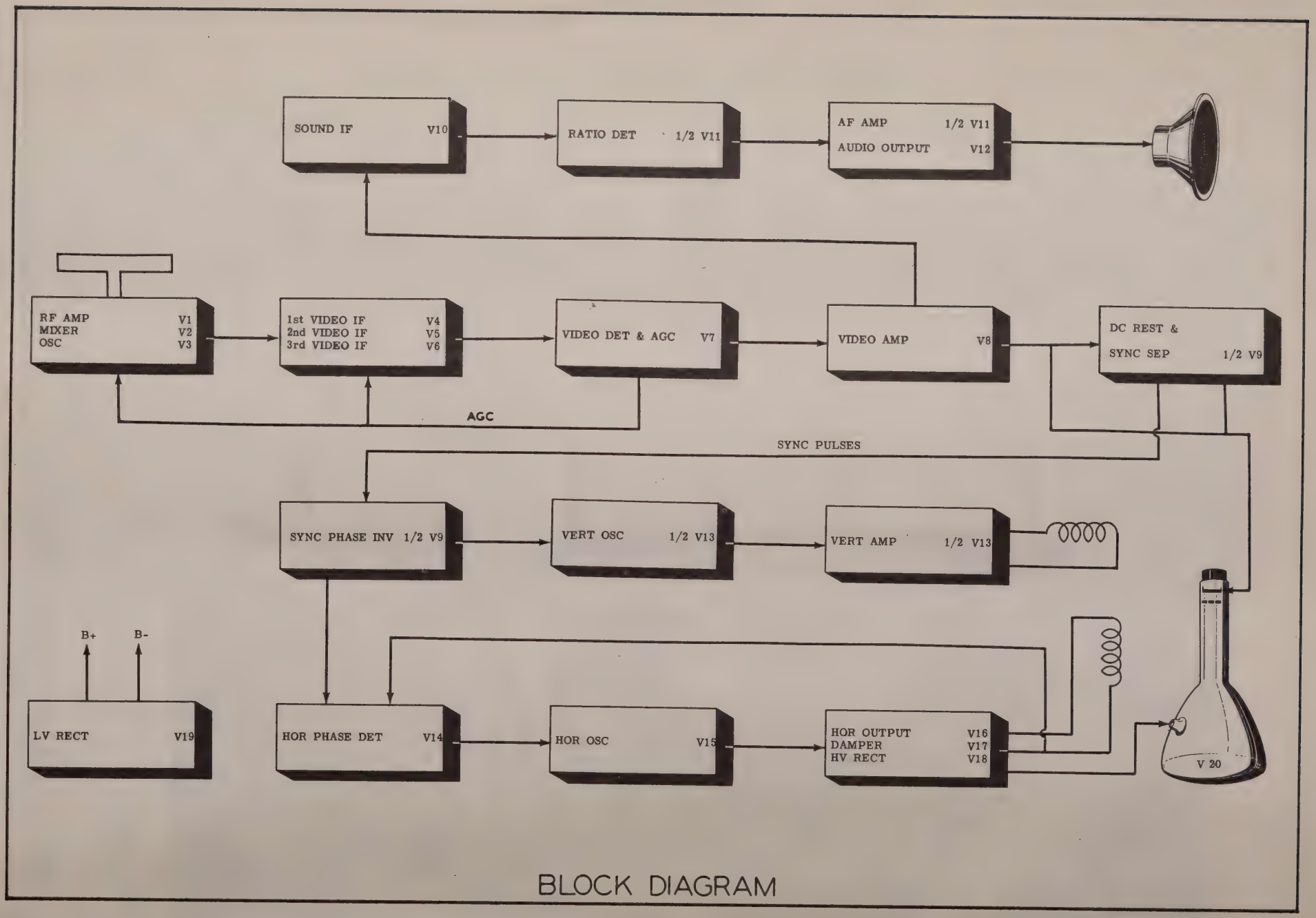
§ Taken With Vacuum Tube Voltmeter.
* Do Not Measure.
† Measured From Pin 8 Of V12.

RESISTANCE READINGS

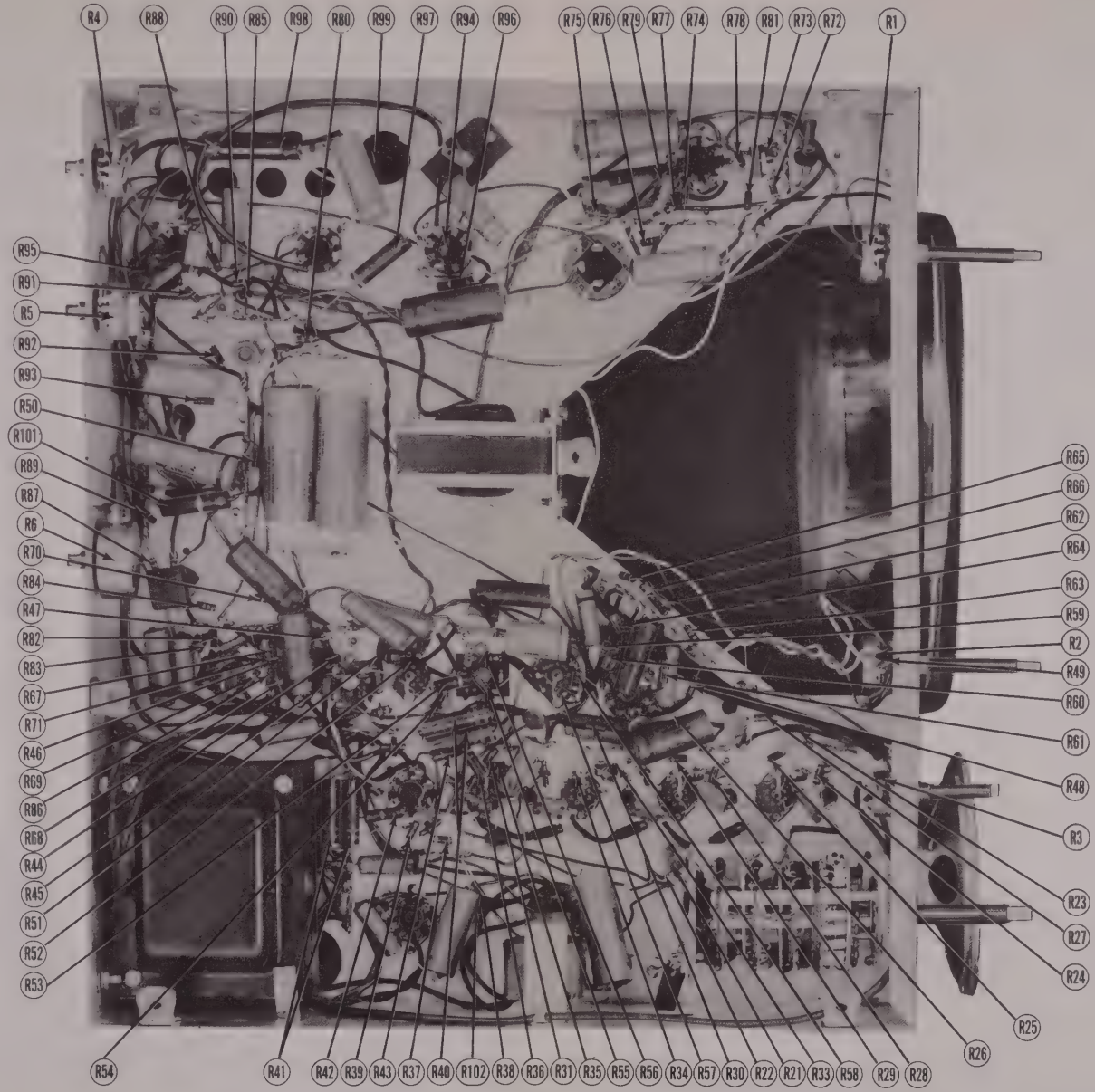
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	2 Meg.	0Ω	.2Ω	0Ω	†10KΩ	†40KΩ	0Ω		
V 2	6AG5	1 Meg.	0Ω	0Ω	.2Ω	†350Ω	†100KΩ	0Ω		
V 3	6C4	♦30KΩ	Inf.	0Ω	.2Ω	♦30KΩ	22KΩ	470Ω		
V 4	6AU6	2 Meg.	0Ω	0Ω	.2Ω	†300Ω	†300Ω	80Ω		
V 5	6AU6	2 Meg.	0Ω	0Ω	.2Ω	†180Ω	†180Ω	80Ω		
V 6	6AU6	.1Ω	0Ω	0Ω	.2Ω	†190Ω	†90Ω	80Ω		
V 7	6AL5	10Ω	1000Ω	0Ω	.2Ω	9.5KΩ	Inf.	680KΩ		
V 8	6AC7	Inf.	.2Ω	600Ω	10KΩ	600Ω	†25KΩ	0Ω	†5.6KΩ	
V 9	12AU7	†8KΩ	1 Meg.	3900Ω	.2Ω	.2Ω	47KΩ	0Ω	270KΩ	0Ω
V 10	6AU6	†470KΩ	†1000Ω	†0Ω	†.2Ω	♦ 1500	†12KΩ	†1000Ω		
V 11	6T8	Inf.	†15KΩ	Inf.	†0Ω	†.2Ω	†0Ω	†0Ω	†470KΩ	♦ 330KΩ
V 12	6V6GT	Inf.	†.2Ω	♦1000Ω	♦ 200Ω	♦250KΩ	Inf.	†0Ω	†0Ω	
V 13	6SN7GT	2 Meg.	♦ 3 Meg. 1.4 Meg	0Ω	2 Meg.	♦7.5KΩ	5.5KΩ 560Ω	.2Ω	0Ω	
V 14	6AL5	4.7 Meg	4.7 Meg	0Ω	.2Ω	30KΩ	Inf.	30KΩ		
V 15	6SN7GT	4.7 Meg.	♦32KΩ	1500Ω	150KΩ	♦300KΩ	1500Ω	.2Ω	0Ω	
V 16	6BG6G	1 Meg.	0Ω	82Ω	Inf.	1 Meg.	Inf.	.2Ω	†8500Ω	* CAP 160Ω
V 17	6W4GT	Inf.	Inf.	♦6KΩ	Inf.	♦200Ω	Inf.	†.2Ω	†0Ω	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	* CAP 400Ω
V 19	5U4G	Inf.	200KΩ	Inf.	60Ω	Inf.	55Ω	Inf.	200KΩ	
V 20	10BP4	0Ω	300KΩ	PIN 10 ♦1500Ω	PIN 11 100KΩ	PIN 12 .2Ω				

† Measured From Pin 8 Of V12.
♦ Measured From Pin 2 Of V19.
* Measured From Pin 3 Of V17.

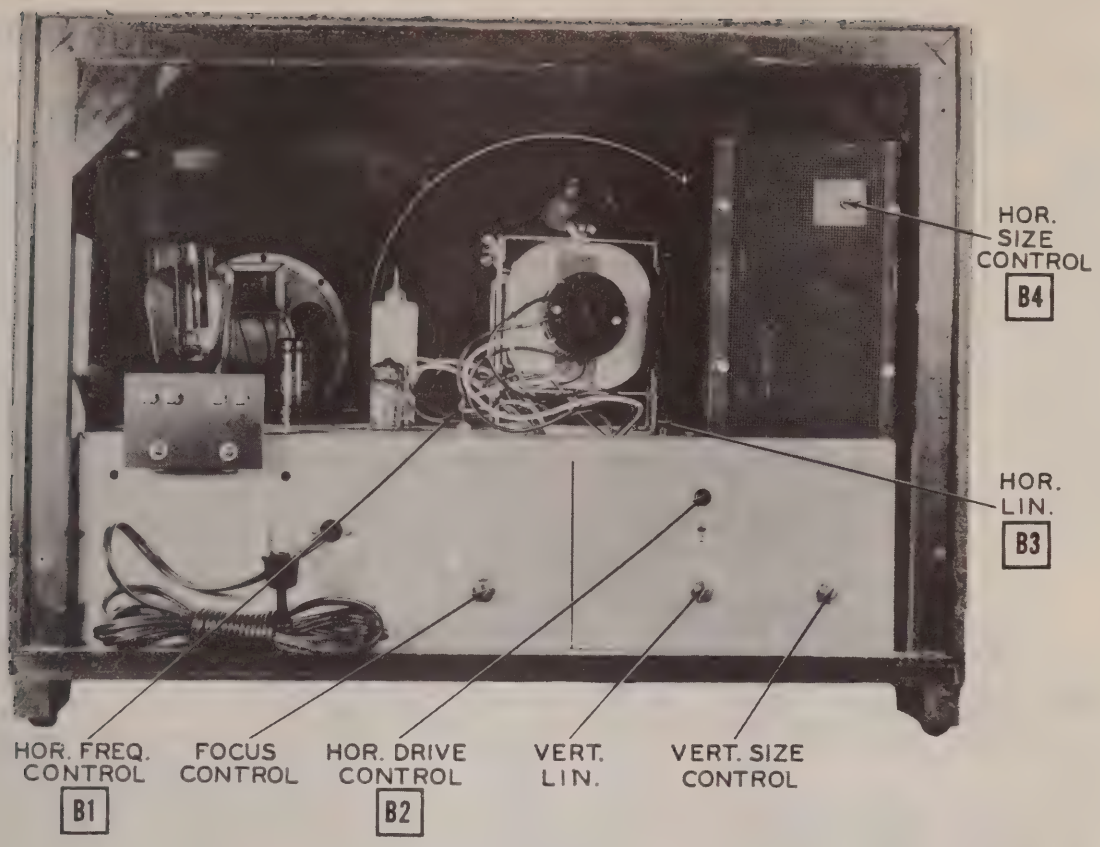
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



BLOCK DIAGRAM



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CABINET – REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the horizontal hold control to mid-position and adjust B1 until picture syncs. normally in the horizontal plane.

Adjust B2 clockwise as far as possible without crowding the left hand side of the test pattern.

Adjust B3 and B4 for proper size and best linearity of test pattern horizontally. Slight readjustment of B2 may be necessary.

PARTS LIST AND DESCRIPTIONS (Continued)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6C4	6C4	6BQ	
V4	1st Video IF	6AU6	6AU6	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AU6	6AU6	7BK	
V7	Video Det. - AGC Det.	6AL5	6AL5	6BT	
V8	Video Amp.	6AC7	6AC7	8N	
V9	DC Restr. - Sync. Sep. - Sync. Phase Inverter	12AU7	12AU7	9A	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det. - AF Amp. -	6T8	6T8	9E	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Vert. Osc. - Vert. Amp.	6SN7GT	6SN7GT	9BD	
V14	Hor. Phase Det.	6AL5	6AL5	6BT	
V15	Hor. Osc.	6SN7GT	6SN7GT	9BD	
V16	Hor. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	Picture Tube	19BP4	19BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	CL-10039	AF868J	UP11CJ - 1098			▲ Filter
B	40	450						■Filter
C	40	450						◆Filter
C2	500	5	CL-10038	PRS5/500	BRH5G5		TVA-27	Bias Filter
C3	40	150	CL-10037	PRS150/12	BR1015		TVA-13	Vert. Amp.Screen Bypass
C4	4	50	CL-10027	PRS50/4	BR45A		TVA-15	Stabilizing Cap.
C5	40	350	CL-10041	PRS350/40	BR4035		TVA-24	Decoupling
C6	40	350	CL-10041	PRS350/40	BR4035		TVA-24	Filter
C7A	10	450	CL-10040	APC222J+	UP7CJ - 1106		EL-420+	◆ Decoupling
B	10	450						▲ Vert. Output Dec.
C	20	450						■ Decoupling
C8	250	25	CL-10009	PRS25/100	BRH251A	JP2K-250	TVA-8	Vert. Output Cath. Bypass
C9	250		CC-15251			GP2K-250		RF Coupling
C10	250		CC-15251			GP2K-250		RF Coupling
C11	25					GP1K-25		RF Coupling
C12	680		CC-15681			GP2K-680		AGC Filter
C13	680		CC-15681			GP2K-680		RF Screen Bypass
C14	680		CC-15681			GP2K-680		RF Fil. Bypass
C15	25					GP1K-25		RF Coupling
C16	25							RF Coupling
C17	15					GP1K-15		RF Coupling
C18	15							RF Coupling
C19	15							RF Coupling
C20	5000		CMX-10002			811-005		Osc. Coupling
C21	5000		CMX-10002			811-005	29C1	Mixer Screen Bypass
C22	68		CC-15681			GP2K-680		Osc. Feedback
C23	75		CC-15030			NP0K-3		Osc. Feedback
C24	68		CC-15681			GP2K-680		Osc. Fil. Bypass
C25	68		CC-15681			GP2K-680		RF Bypass
C26	68		CC-15681			GP2K-680		RF Bypass
C27	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	Mixer Plate Dec.
C28	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	Filament Bypass
C29	1.0	300	CM-15101	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C30	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	AGC Filter
C31	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	1st Video IF Decoupling
C32	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	1st Video IF Fil. Bypass
C33	100	500	CM-15101	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C34	100	600	CC-15221	1468-0001S	5W5T16	GP1K-120	1FM-31S	IF Coupling
C35	5		CC-15050	1468-0.0005	5W5V5	NP0K-5	TS-55	Video Diode Filter
C43	.1	600	CP-16104	P688-1	GT6P1		TM-1	Bias Filter
C44	.01	600	CF-16103	P688-01	GT6S1	GP2-335-01	TM-11	AGC Diode Filter
C45	1000		CC-15681		1W5T7	GP2K-680	1FM-37	Video Amp. Cath. Bypass
C47	470		CC-15471	1468-0005	5W5T5	GP2K-470	1FM-35	Video Amp. Cath. Bypass
C48	47	500	CM-15470	1469-00005	SR5Q5	NP0M-50	TS-45	Fixed Trimmer
C49	47	500	CM-15470	1469-00005	SR5Q5	NP0M-50	TS-45	Fixed Trimmer
C50	.1	600	CP-16104	P688-1	GT6P1		TM-1	Video Coupling
C51	.1	600	CP-16104	P688-1	GT6P1		TM-1	Pix Tube Cathode Dec.
C52	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	AGC-Video Det. Fil. By.
C53	39	500	CM-15390	1469-00004	SR5Q4	GP1K-39	1FM-44	Sound IF Coupling
C54	5000		CMX-10002	1467-005	1D5D5	811-005	29C1	Sound IF Screen Bypass
C55	.22	600	CF-16203	P688-02	GT6B2		TM-12	Sound IF Cath. Bypass
C56	.22	600	CP-16203	P688-02	GT6B2		TM-12	Sound IF Decoupling
C57	3		CC-15030			NP0K-3		Neutralizing
C58	1000		CC-15102	1468-001	1W5D1	GP2L-001	1FM-21	Diode Load Cap.
C59	3900		CC-15392	1467-004	1D5D4		1FM-24	De-emphasis
C60	.05	600	CP-16503	P688-05	GT6S5		TM-15	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	.005	600	CP-16502	P688-005	GT6S5	GP2M-005	TM-25	Audio Coupling
C62	.05	600	CP-16503	P688-05	GT6S5		TM-15	Audio Coupling
C63	.05	600	CP-16503	P688-05	GT6S5		TM-15	Bias Filter
C64	.01	600	CP-16103	P688-01	GT6S1	GP2-335-01	TM-11	Output Plate Bypass
C65	.22	500	CM-15220	1468-000025	5W5Q25	GP1K-22	MS-425	DC Res. Cath. Bypass
C66	.01	600	CP-16103	P688-01	GT6S1	GP2-335-01	TM-11	Sync Coupling
C67	2000		CC-15202	1467-002	1W5D2	GP2M-002	1FM-22	Integrator Network
C68	5000		CC-15502	1467-005	1D5D5	GP2M-005	1FM-25	Integrator Network
C69	5000		CC-15502	1467-005	1D5D5	GP2M-005	1FM-25	Integrator Network
C70	4700		CC-15472	1467-005	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C71	.1	600	CP-16104	P688-1	GT6P1		TM-1	Vert. Discharge
C72	.25	600	CP-16254	684-25	GT6P25		TC-2	Vert. Sweep Coupling
C73	1000		CC-15102	1468-001	1W5D1	GP2L-001	1FM-21	Horiz. Sync Coupling
C74	1000		CC-15102	1468-001	1W5D1	GP2L-001	1FM-21	Horiz. Sync Coupling
C75	.01	600	CP-16103	P688-01	GT6S1	GP2-335-01	TM-11	AFC Filter
C76	.05	600	CP-16503	P688-05	GT6S5		TM-15	Horiz. AFC Feedback
C77	.005	600	CP-16502	P688-005	GT6D5	GP2M-005	TM-25	AFC Filter
C78	.05	600	CP-16503	P688-05	GT6S5		TM-15	Horiz. Osc. Grid Cap.
C79	330	500	CM-15331			GP2K-330		Horiz. Feedback Fixed Trimmer
C80	3900	500	CM-15392					Horiz. Discharge
C81	390	500	CM-15391	1468-0004	5W5T4	GP2K-390	1FM-34	Horiz. Sweep Coupling
C82	270	500	CM-15271	1468-00025	5W5T25	GP2K-270	1FM-325	Horiz. Feedback •
C83	13	1500	CMX-10008					Horiz. Output Screen Byp.
C84	.05	600	CP-16503	P688-05	GT6S5		TM-15	Horiz. Output Cath. Byp.
C85	.25	600	CP-16254	684-25	GT6P25		TC-2	Damper Filter
C86	.033	1000	CP-16353	P1088-033	GT6P1		TM-1	Damper Filter
C87	.1	600	CP-16104	P688-1	GT6P1		TM-1	Damper Coupling
C88	.25	400	CP-16254	P488-25	GT4P25		TC-2	Horiz. Sweep Coupling
C89	500	10000	CCX-10000			410-500		High Voltage Filter
C90	.01	600	CP-16103	P688-01	GT6S1		TM-11	Line Filter
C91	.01	600	CP-16103	P688-01	GT6S1		TM-11	Line Filter

• Some models use 18 MMF in this application.
+ Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg	½	VC-12117			Vert. Hold Control } Dual Concentric
B	50KΩ	½				Horiz. Hold Control }
R2A	750Ω	½	VC-12118			Contrast Control - Tapped @ 500Ω
B	100KΩ	½				Brightness Control (Dual Concentric)
R3A	250K		VC-12119A	Q13-130	M-64-Z	Volume Control
B	Switch		Not Req.	76-1	SW-A	Attach to R3A Per Instructions
R4	2.5 Meg	½	VC-12121	Q11-239	M-84-S	Vert. Size Control
R5	5000Ω	½	VC-12120	Q11-114	M-19-S	Vert. Linearity Control
R6	15000Ω	4	VC-12122		10-1500	Focus Control (Wire Wound)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE STATED
R7	390Ω	½	RC-43900		Padder
R8	560Ω	½	RC-35600		Padder
R9	560Ω	½	RC-35600		Padder
R10	1000Ω	½	RC-31001		RF Grid
R11	33KΩ	½	RC-33301		RF Screen
R12	10KΩ	1			RF Plate
R13	16KΩ 10%	½		BTS-16K	RF Plate Coil Shunt
R14	470Ω	½			Mixer Grid Coil Shunt
R15	82KΩ	½			Mixer Grid
R16	1 Meg	½			Mixer Grid
R17	82KΩ	½			Mixer Screen
R18	82KΩ	½			Oscillator Grid
R19	470Ω	½			Oscillator Cathode
R20	680Ω	½			Oscillator Plate
R21	22KΩ 5%	2	RC-52202		Oscillator Plate Decoupling
R22	100Ω	½	RC-31000		Decoupling Network
R23	100Ω	½	RC-31000		Mixer Plate Decoupling
R24	8200Ω 10%	½	RC-38201		1st Video IF Grid
R25	82Ω	½	RC-30820		1st Video IF Cathode
R26	10Ω	½	RC-31000		1st Video IF Decoupling
R27	330Ω	½	RC-33300	BW-½-330	AGC Network
R28	22KΩ	½	RC-32202		2nd Video IF Grid
R29	82Ω	½	RC-30820		2nd Video IF Cathode
R30	100Ω	½	RC-31000		2nd Video IF Decoupling
R31	1 Meg	½	RC-31004	BTS-1 Meg	AGC Network
R32	8200Ω 10%	½	RC-38201		3rd Video IF Grid Coil Shunt
R33	82Ω	½	RC-30820		3rd Video IF Cathode
R34	100Ω	½	RC-31000		3rd Video IF Decoupling
R35	680KΩ	½	RC-36803	BTS-680K	AGC Diode Load
R36	39KΩ	1	RC-43902	BTA-39K	Voltage Divider
R37	8200Ω 10%	½	RC-38201	BTS-8200	Video Det. Diode Load
R38	1000Ω	½	RC-31001	BTS-1000	Bias Network
R39	120Ω	½	RC-31200		Parasitic Suppressor
R40	27KΩ	4			Video Amp. Plate See note 1
R41	22KΩ	3			Video Amp Plate See note 2
R42	22KΩ	1	RC-42202	BTA-22K	Voltage Divider
R43	5600Ω	1	RC-45601	BTA-5600	Voltage Divider
R44	2200Ω	½	RC-32201	BTS-2200	Picture Tube Grid
R45	270KΩ	½	RC-32705	BTS-270K	DC Restorer Load
R46	47KΩ	½	RC-34702	BTS-47K	DC Restorer Load
R47	820KΩ	½	RC-38203	BTS-820K	Voltage Divider
R48	220KΩ	½	RC-32203	BTS-220K	Voltage Divider
R49	10KΩ	½	RC-31002	BTS-10K	Voltage Divider
R50	1000Ω	½	RC-31001	BTS-1000	Accelerating Anode Decoupling
R51	470KΩ	½	RC-34703		Sound IF Grid
R52	1000Ω	½	RC-31001		Sound IF Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R53	39KΩ	1	RC-43902		Sound IF Screen
R54	12KΩ	½			Voltage Divider
R55	1000Ω	½	RC-31001		Sound IF Decoupling
R56	15KΩ	½	RC-31502	BTS-15K	De-emphasis
R57	6800Ω 10%	½	RC-36801	BTS-6800	Ratio Det. Diode Load
R58	6800Ω 10%	½	RC-36801	BTS-6800	Ratio Det. Diode Load
R59	470KΩ	½	RC-34703	BTS-470K	AF Grid
R60	330KΩ	½	RC-33303	BTS-330K	AF Plate
R61	100KΩ	½	RC-31003	BTS-100K	Output Grid
R62	330KΩ 5%	½	RC-33303B	BTS-330K 5%	Voltage Divider
R63	180KΩ 5%	½	RC-31803B	BTS-180K 5%	Voltage Divider
R64	47002	½	RC-34701	BTS-4700	Voltage Divider
R65	470KΩ	½	RC-34703	BTS-470K	Voltage Divider
R66	3902	1	RC-43900	BTA-390	Filter
R67	1 Meg	½	RC-31004	BTS-1 Meg	Sync Separator Grid
R68	39002	½	RC-33901	BTS-3900	Sync Separator Cathode
R69	39002	½	RC-33901	BTS-3900	Sync Separator Plate
R70	39002	½	RC-33901	BTS-3900	Sync Separator Plate
R71	22K2	½	RC-32202	BTS-22K	Integrator
R72	82002 10%	½	RC-38201	BTS-8200	Integrator
R73	82002 10%	½	RC-38201	BTS-8200	Integrator
R74	1 Meg	½	RC-31004	BTS-1 Meg	Vert. Oscillator Grid See note 3
R75	1.5 Meg	½	RC-31504	BTS-1.5 Meg	Vert Oscillator Plate
R76	6.8 Meg	½	RC-36804	BTS-6.8 Meg	Voltage Divider
R77	100KΩ	½	RC-31003	BTS-100K	Voltage Divider
R78	2.2 Meg	½	RC-32204	BTS-2.2 Meg	Vert. Amp. Grid
R79	560Ω	½	RC-35600	BTS-560	Vert. Amp. Cathode
R80	6800Ω 10%	½	RC-36801	BTS-6800	Vert. Amp. Plate Decoupling
R81	3300Ω	½	RC-33301	BTS-3300	Vert. Peaking
R82	100KΩ	½	RC-31003	BTS-100K	Horiz. Phase Det. Load
R83	100KΩ	½	RC-31003	BTS-100K	Horiz. Phase Det. Load
R84	4.7 Meg	½	RC-34704	BTS-4.7 Meg	Horiz. Phase Det. Load
R85	470KΩ 5%	½	RC-34703	BTS-470K 5%	Horiz. AFC Filter Network
R86	27KΩ	½	RC-32702	BTS-27K	Feedback Network
R87	47002	½	RC-34701	BTS-4700	Feedback Network
R88	15002	½	RC-31501	BTS-1500	Horiz. Oscillator Cathode
R89	56002	½	RC-35601	BTS-5600	Horiz. Oscillator Plate
R90	100KΩ	½	RC-31003	BTS-100K	Horiz. Oscillator Grid
R91	270KΩ	½	RC-32703	BTS-270K	Horiz. Oscillator Plate Decoupling
R92	22KΩ	½	RC-32202	BTS-22K	Filter
R93	56KΩ	½	RC-35602	BTS-56K	Filter
R94	682	½	RC-30680		Parasitic Suppressor
R95	1 Meg	½	RC-31004	BTS-1 Meg	Horiz. Output Grid
R96	822 10%	1	RC-40820	BW-1-82	Horiz. Output Cathode
R97	82002	2	RC-38201	BT-2-8200	Horiz. Output Screen
R98	60002	20	RX-10012	DG-6000	Damper Filter (Wire Wound)
R99	5.32 10%	½	RC-30030		High Voltage Filament
R100	1 Meg	½	RC-31004		High Voltage Filter
R101	10002 10%	2	RC-31001	BT-2-1000	Focus Coil Shunt See note 4
R102	152	½	RC-30150	BW-½-15	Bias Network

NOTE 1 : Some models use two 56KΩ, 2 watt, resistors in parallel to obtain correct amount of resistance and wattage. Each resistor obtainable under manufacturer's part number RC-55602.
NOTE 2 : Some models use two 43KΩ, 2 watt, resistors in parallel to obtain correct amount of resistance and wattage. Each resistor obtainable under manufacturer's part number RC-54302.
NOTE 3 : Some models use 680KΩ resistor in this application.
NOTE 4 : Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC @1.7 A	800V CT @ .2A	5VAC @ 3 A	6.3VAC @ 5.9 A	TP-10003	P-6165 & P-6134		P-2955 & P-2944
	SEC.4 6.3VAC @ 1.2 A							

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE SEC.	RATING: DC RESISTANCE PRI.	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T2	70Ω	80Ω	LG-10017				Horiz. AFC Coil
T3	230Ω		TO-10022	A-8121	TSO-1	A-4000	Vert. Block. Osc. Trans
T4	365Ω Tap @ 125Ω	SEC.1 13.6Ω Tap@ .6Ω SEC. 2 .02Ω	TO-10020	A-8118	TPB-1		Horiz. Output Trans.
T5	560Ω	72	TO-10021	A-8116	TSO-1 †	A-3035 †	Vert. Output Trans.
T6A	14Ω		TO-10026	DY-1			Horiz. Deflection Yoke
B	68Ω						
T7	255Ω		TO-10025	FC-10			Vert. Deflection Yoke Focus Coil

† Drill new mounting hole.

MECK MODEL XL750

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MECK PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	5200Ω	3.5Ω	295Ω	.4Ω	Part of speaker(SR-10019)	A-3877 ♦	RO-201 ♦	A-2930 ♦	♦ Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MECK PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.5Ω	SR-10019 #	ST-107 ▲ § Mod.P5-V	5A1 §	# Includes output transformer § Remount output transformer ▲ Drill and tap magnet frame.
	CONE DIA.	V. C. DIA.				
SP2	4 13/16"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MECK PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.200 A	32Ω	1.5 Henries	LG-10021	C-2325 ++	TR-4200++	C-2991++	++ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	
L2	Ant. Input coil	0Ω CT	0Ω			Part of RF Tuner Assembly
L3	Fil. Choke	0Ω				" " " " "
L4	Fil. Choke	0Ω				" " " " "
L5	1st Video IF Trans.	.1Ω		TS-10030		
L6	Fil. Choke	0Ω		LG-10019		
L7	2nd Video IF Trans.	.1Ω		TS-10030		
L8	Fil. Choke	0Ω		LG-10019		
L9	RF Choke	3.5Ω		LG-10020		Inductance - 37 Microhenries
L10	3rd Video IF Trans.	.1Ω		TS-10030		
L11	Fil. Choke	0Ω		LG-10019		
L12	RF Choke	3.5Ω		LG-10020		Inductance - 37 Microhenries
L13	4th Video IF Trans.	.1Ω		TS-10030		
L14	Peaking Coil	7Ω		LG-10014		Inductance - 100 Microhenries
L15	Peaking Coil	18Ω		LG-10016		Inductance - 600 Microhenries
L16	Peaking Coil	9Ω		LG-10018		150 Microhenries - wound on 18KΩ resistor
L17	Peaking Coil	20Ω		LG-10015		Inductance - 300 Microhenries
L18	Sound IF Take-Off	1.5Ω	1.5Ω	TS-10042		
L19	Ratio Det. Trans.	4Ω	.2Ω	TS-10034B		
L20	Horiz. Linearity Control	35Ω		TO-10024		
L21	Horiz. Size Control	.4Ω		TO-10023		

MISCELLANEOUS

ITEM No.	PART NAME	MECK PART No.	NOTES
M1	RF Tuner Assembly	TT-10002	
M2	Ion Trap	IT-10000	Hepner Type #501
	Knob	K-10066	Rohden #R3000-300 with #1004 spring and outer gold ring
	Knob	K-10068	Rohden #3000-702 (Inner Knob)
	Knob	K-10069	Rohden #153151-0 (Inner Knob)
	Knob	K-10070	Rohden #153150-0 (Outer Knob - Gold Arrow)
	Knob	K-10079	Rohden #700 - Spring Mounting - Flat gold ring
	Tuner Escutcheon Plate	N-10007B	
	Wood Cabinet	ZW-10037	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MECK PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	5200Ω	3.5Ω	295Ω	.4Ω	Part of speaker (SR-10019)	A-3877 ♦	RO-201 ♦	A-2930 ♦	♦ Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MECK PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.5Ω	SR-10019 #	ST-107 ▲ § Mod.P5-V	5A1 §	# Includes output transformer § Remount output transformer ▲ Drill and tap magnet frame.
	CONE DIA.	V. C. DIA.				
SP2	4 13/16"	9/16"				

FILTER CHOKE

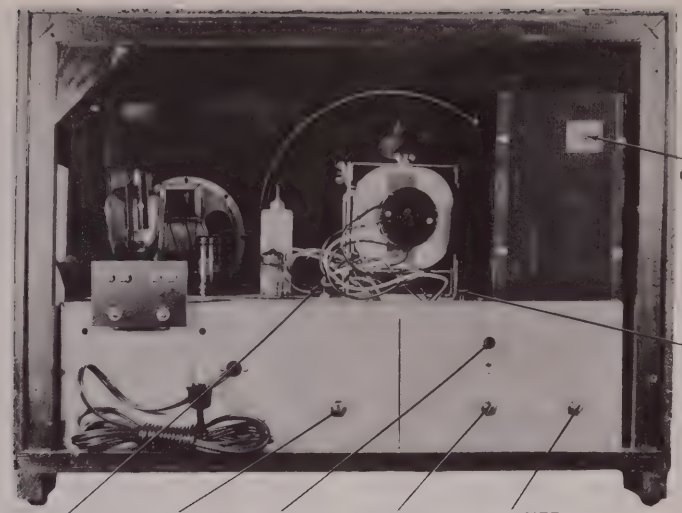
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~/)	MECK PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.200 A	32Ω	1.5 Henries	LG-10021	C-2325 ↔	TR-4200↔	C-2991↔	↔ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	
L2	Ant. Input Coil	0Ω CT	0Ω			Part of RF Tuner Assembly
L3	Fil. Choke	0Ω				" " " " "
L4	Fil. Choke	0Ω				" " " " "
L5	1st Video IF Trans.	.1Ω		TS-10030		
L6	Fil. Choke	0Ω		LG-10019		
L7	2nd Video IF Trans.	.1Ω		TS-10030		
L8	Fil. Choke	0Ω		LG-10019		
L9	RF Choke	3.5Ω		LG-10020		Inductance - 37 Microhenries
L10	3rd Video IF Trans.	.1Ω		TS-10030		
L11	Fil. Choke	0Ω		LG-10019		
L12	RF Choke	3.5Ω		LG-10020		Inductance - 37 Microhenries
L13	4th Video IF Trans.	.1Ω		TS-10030		
L14	Peaking Coil	7Ω		LG-10014		Inductance - 100 Microhenries
L15	Peaking Coil	18Ω		LG-10016		Inductance - 600 Microhenries
L16	Peaking Coil	9Ω		LG-10018		150 Microhenries - wound on 16KΩ resistor
L17	Peaking Coil	20Ω		LG-10015		Inductance - 300 Microhenries
L18	Sound IF Take-Off	1.5Ω	1.5Ω	TS-10042		
L19	Ratio Det. Trans.	4Ω	.2Ω	TS-10034B		
L20	Horiz. Linearity Control	35Ω		TO-10024		
L21	Horiz. Size Control	.4Ω		TO-10023		

MISCELLANEOUS

ITEM No.	PART NAME	MECK PART No.	NOTES
M1	RF Tuner Assembly	TT-10002	
M2	Ion Trap	IT-10000	Hepner Type #501
	Knob	K-10066	Rohden #R3000-300 with #1004 spring and outer gold ring
	Knob	K-10068	Rohden #3000-702 (Inner Knob)
	Knob	K-10069	Rohden #153151-0 (Inner Knob)
	Knob	K-10070	Rohden #153150-0 (Outer Knob - Gold Arrow)
	Knob	K-10079	Rohden #700 - Spring Mounting - Flat gold ring
	Tuner Escutcheon Plate	N-10007B	
	Wood Cabinet	ZW-10037	



CABINET – REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the horizontal hold control to mid-position and adjust B1 until picture syncs. normally in the horizontal plane.

Adjust B2 clockwise as far as possible without crowding the left hand side of the test pattern.

Adjust B3 and B4 for proper size and best linearity of test pattern horizontally. Slight readjustment of B2 may be necessary.

MOTOROLA MODEL 69L11

TRADE NAME	Motorola, Model 69L11 (Ch. HS-175)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1S5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING:	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form .13 Amp. @ 117 Volts AC or 60MA @ 90 Volts DC and 22MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial calibration, turn tuning gang fully closed. Loosen the two set screws on the tuning gang dial cord drum. Turn the dial until the last calibration on the low frequency end, is under the pointer on the handle.

Use battery power when available. If AC power is used, use an insolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of mixer section of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.		Loop	1600KC (400~ Mod.)	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC (400~ Mod.)	1400KC	"	A6	"
4.		Loop	"	"	"	A7	Replace set in cabinet and adjust for maximum output.

If A5 and A6 do not have sufficient range for proper adjustment, the trimmers on the opposite side of the gang may be used also for these adjustments.

The RF coil is adjusted at the factory and should not require adjustment. If it is known to be off it should be adjusted for maximum output at 600KC. If it is adjusted, alternate the RF coil adjustment and step 3 several times ending with the RF coil adjustment.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 11/49 SET #76 FOLDER 15

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 69L11

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1U4	1U4	6AR	
V4	DET.-AVC-AF	1S5	1S5	6AU	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	23K76985	AF886D4A†	UP7DJ63		EL-443†	● Filter
B	40	150		PRS25/50			TA-50	■ Filter
C	20	150						▲ Filter
D	80	25						Filament Bypass
C2	100	500	21R6641	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C3	.05	100	8S9805	P288-05	GT2S5		68P16	AVC Filter
C4	.05	100	8S9805	P288-05	GT2S5		68P16	AVC Filter
C5	1.5		21B77267			NP0K-1.5		Osc. Coupling
C6	.05	100	8S9805	P288-05	GT2S5		68P16	Osc. Anode Dec.
C7	.05	100	8S9805	P288-05	GT2S5		68P16	IF Grid Filter
C8	.1	200	8S9806	P288-1	GT2P1		68P17	Filament Bypass
C9	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C10	.05	100	8S9805	P288-05	GT2S5		68P16	Filament Bypass
C11	.005	600	8S9813	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C12	.05	100	8S9805	P288-05	GT2S5		68P16	AF Screen Bypass
C13	.05	100	8S9805	P288-05	GT2S5		68P16	AF Plate Dec.
C14	100		21B77286	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C15	.005	600	8S9813	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C16	.002	400	8S9824	P688-002	GT6D2	GP2M-002	TM-22	Output Plate Bypass
C17	.15	200	1A77283	P288-15 ‡			72P53	Line Isolation
C18	.05	400	8S9816	P488-05	GT4S5		TM-15	Line Filter
C19	.002	400	8S9824	P688-002	GT6D2	GP2M-002	TM-22	Handle Isolation

‡ When replacing rewind 10 turns hook-up wire on replacement.
† Parallel sections to obtain desired capacity.

CONTROLS

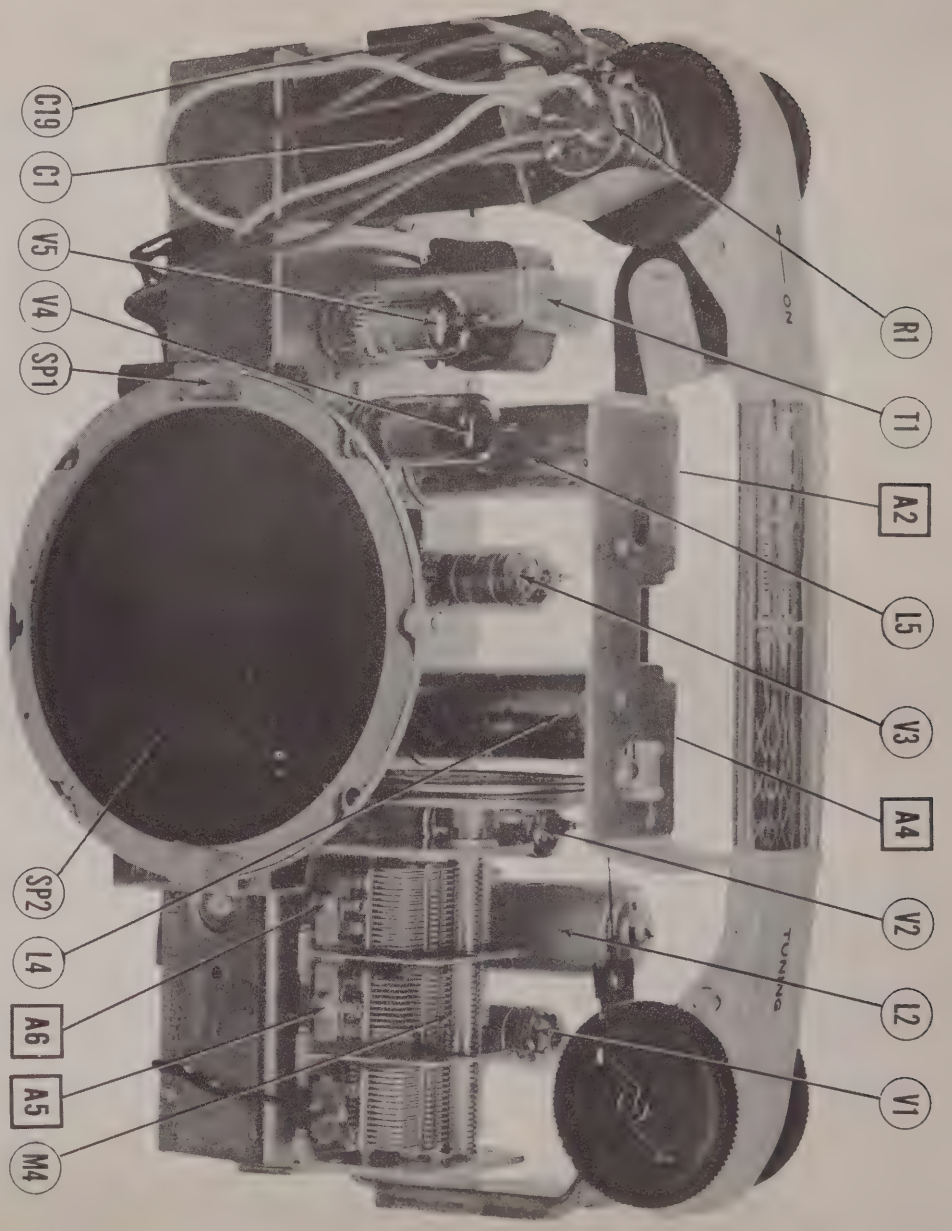
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	18A480103	Q13-137*	15/16-63-Z*	Volume control
B	Switch			76-2 †	DPST Switch ♯	

♯ Attached at factory.
* File shaft to duplicate original.
† Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	RF Grid
R3	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	AVC Network
R4	5.6 Meg.	½	6R3988	BTS-5.6 Meg.	AVC Network
R5	1 Meg.	½	6R6004	BTS-1 Meg.	AVC Network
R6	100KΩ	½	6R6075	BTS-100K	Osc. Grid
R7	33KΩ	½	6R6012	BTS-33K	Osc. Anode Decoupling
R8	220Ω	½	6R3933	BW-½-220	Filament String
R9	8.2 Meg.	½	6R5585	BTS-8.2 Meg.	IF Grid
R10	6.8 Meg.	½	6R3987	BTS-6.8 Meg.	AF Grid
R11	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	AF Screen
R12	1 Meg.	½	6R6004	BTS-1 Meg.	AF Plate

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R13	220KΩ	½	6R6015	BTS-220K	AF Plate Decoupling
R14	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Output Grid
R15	270Ω	½	6R6432	BW-½-270	Filament String
R16	470Ω	½	6R6090	BTS-470	Filament String
R17	820Ω	½	6R6269	BTS-820	Filter
R18	2060Ω	5	17K75249		Filter Center Tapped, (Wire Wound)
R19	150Ω	2½	17A76986		Surge Limiter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	9000Ω	3.2Ω	720Ω	.7Ω	25B76952	A-3879 §	A-2932 §	RO-16 §	§ Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-107		
SP1	PM	3.2Ω	50K480198	MOD.P5-V	5A15	50C76953 used in early production.
	CONE DIA.	V. C. DIA.				
SP2	4 1/2"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.8Ω		24C690839		Includes panel.
L2	RF Trans.	195Ω	6.3Ω	24B76988		Includes 3.3MMF capacitor.
L3	Osc. Coil	2.7Ω	8.3Ω	24A76943	14-1060 ♦	♦ Add 50MMF from high side of tuning cap. to Osc. Grid.
L4	Input IF	26Ω	25.8Ω	24B76990	16-6678	Includes both 70MMF capacitors but less shield.
L5	Output IF	26.2Ω	26Ω	24B77264	16-6678	Includes both 70MMF capacitors but less shield.

BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	9V "A" 90V "B"				753			F6A60	

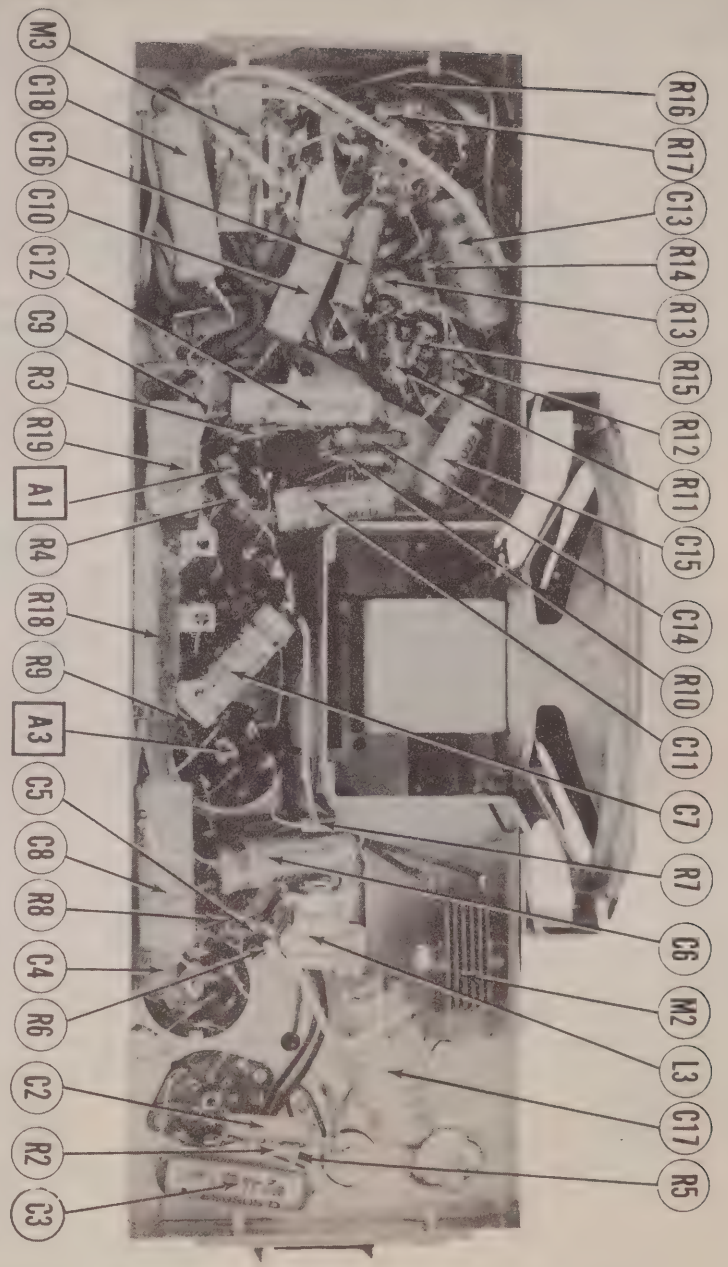
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MOTOROLA PART No.	SYLVANIA PART No.		
M2	.090A	48B478111	NC-5		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Switch	40A27114	AC/DC-Battery
M4	3 Gang. Var. Cap.	19B480125	(35-470MMF, 30-195MMF, 35-470MMF)
A7	Trimmer	20A480185	Ant. Adj.
	Dial Scale	34B480127	
	Dial Crystal	61B480126	
	Knob	36B480128	

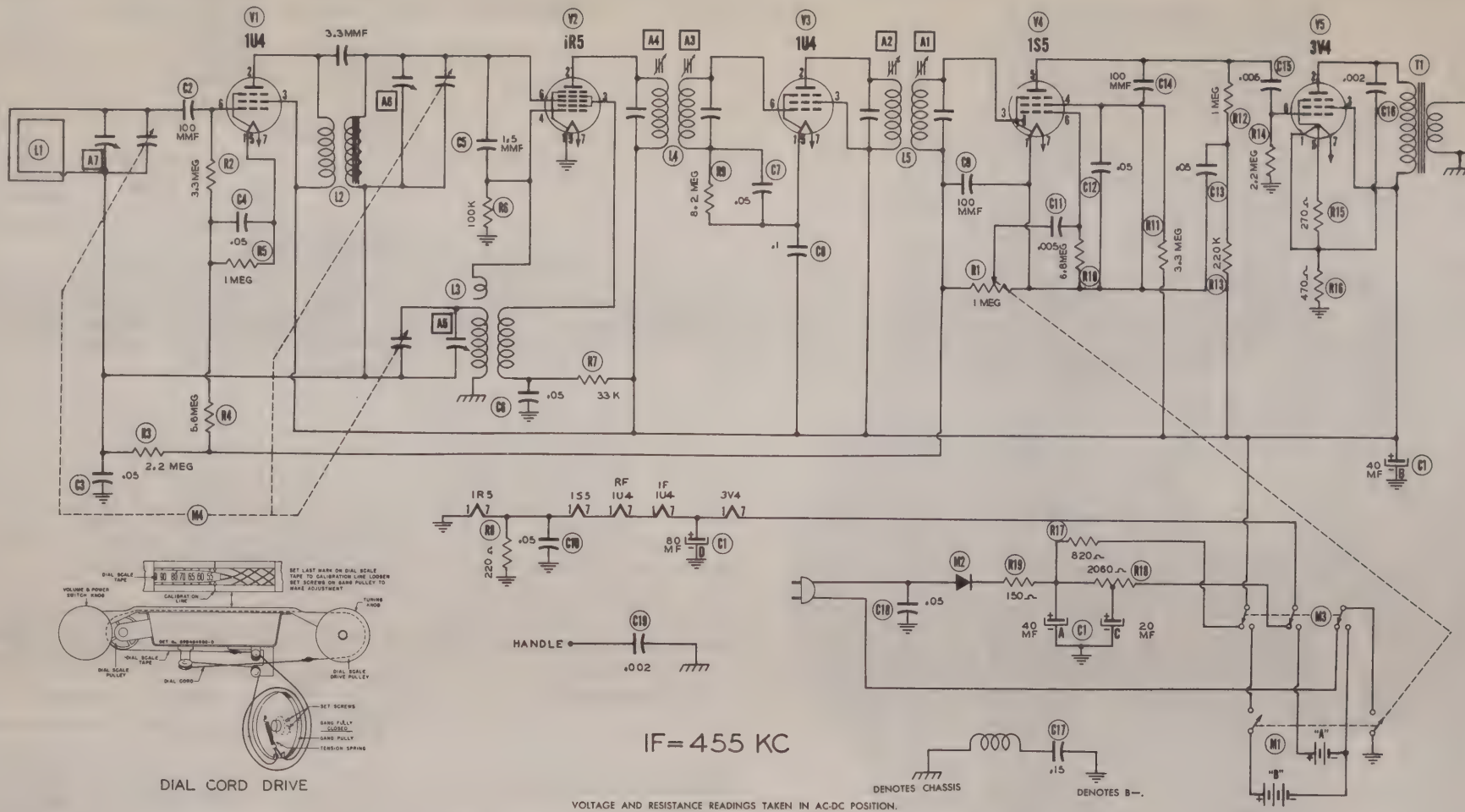
CHASSIS—BOTTOM VIEW



DATE 11/49 SET #76 FOLDER 15

MOTOROLA MODEL 69L11

MOTOROLA MODEL 69L11



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	2.3VDC	90VDC	90VDC	0V	2.3VDC	.1VDC	3.5VDC
V 2	1R5	0V	90VDC	45VDC	§-2.5VDC	0V	.1VDC	1VDC
V 3	1U4	3.5VDC	90VDC	90VDC	.4VDC	3.5VDC	.1VDC	4.6VDC
V 4	1S5	1VDC	.1VDC	.3VDC	22VDC	15VDC	.1VDC	2.3VDC
V 5	3V4	4.6VDC	85VDC	90VDC	75VDC	5.8VDC	0V	7VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†1000Ω	†1000Ω	Inf.	*	4.3 Meg.	*
V 2	1R5	*	†1000Ω	†33KΩ	100KΩ	*	3.2 Meg.	*
V 3	1U4	*	†1000Ω	†1000Ω	1 Meg.	*	8.2 Meg.	*
V 4	1S5	*	3.2 Meg.	1 Meg.	†3.3Meg.	†1.2Meg.	6.8 Meg.	*
V 5	3V4	*	†1.5KΩ	†1000Ω	220KΩ	*	2.2 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† Measured from output of M2.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

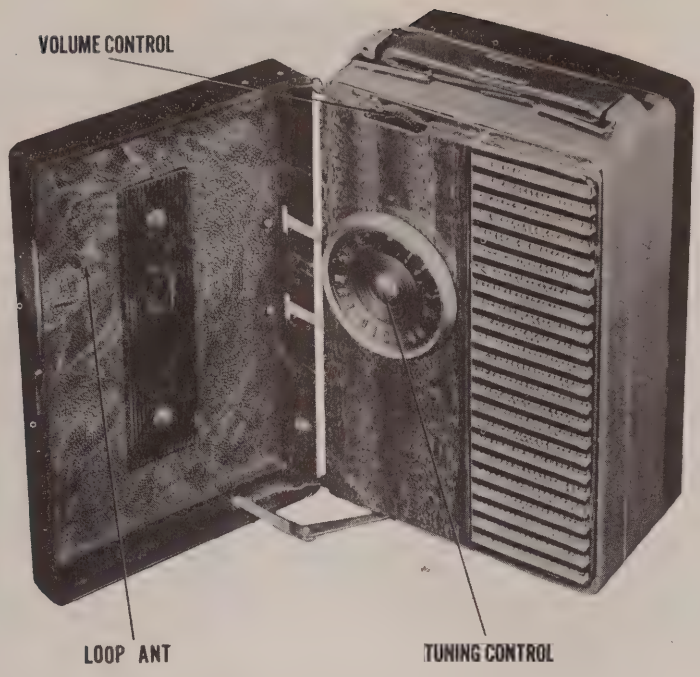
PHOTOFACT* Folder

*TRADE MARK

RCA VICTOR MODELS 8B41, (Ch. RC-1069), 8B42 (Ch. RC-1069A), 8B43 Ch. RC-1069B) (BATTERY OPERATED)

RCA VICTOR MODELS 8B41, (Ch. RC-1069), 8B42 (Ch. RC-1069A), 8B43 Ch. RC-1069B) (BATTERY OPERATED)

RCA VICTOR MODELS 8B41, (Ch. RC-1069), 8B42 (Ch. RC-1069A), 8B43 Ch. RC-1069B) (BATTERY OPERATED)



RCA VICTOR MODEL 8B42

TRADE NAME	RCA Victor, Models 8B41 (Ch. RC-1069), 8B42 (Ch. RC-1069A), 8B43 (Ch. RC-1069B)
MANUFACTURER	RCA Victor, Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3S4 Power Output
POWER SUPPLY RATING:	1.5 Volts "A" Supply and 67.5 Volts "B" Supply 210MA @ 1.5 Volts DC and 8MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

a) Check the batteries for full voltage before beginning alignment. If necessary replace them with fresh batteries.

b) To set dial turn tuning cap. fully closed and set dial to last reference mark at low frequency end of dial.

c) Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

d) Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

e) An alignment shield must be used during oscillator alignment (steps 2 and 3). A suitable shield may be made by fashioning a substitute center strip portion of the case. (The case acts as a shield for the 1R5 tube, the tuning gang and the oscillator coil). This must be made by aluminum with holes drilled directly over A5 and A6.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to stator of converter grid section of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Quiet Point near 1600KC	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2.		Loop	1400KC (400∿ Mod.)	1400KC	"	A5	See note "e" above. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Rock tuning gang while making this adjustment.
3.		Loop	600KC (400∿ Mod.)	600KC (400∿ Mod.)	"	A6	Rock tuning gang while making this adjustment. Repeat steps 2 and 3 until no further improvement can be made.

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DATE 11/49 SET #76 FOLDER 16

PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 8B42

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	10	70	73964	SRE100/8	BBR10-90			RF Bypass
C2	51		73901			GP1K-50		Osc. Grid Cap.
C3	1500		47093			GP2L-0015		Tuning Cap. Isolation
C4	10000		73960			811-01	36C1	Osc. Anode Decoupling
C5	.05	200	70615		GT2S5		68P16	AVC Filter
C6	.003	200	73961				68P3	IF Grid Filter
C7	4		73153					Fixed Trimmer
C8	75		73963			GP1K-75		Diode RF Filter
C9	33		73962	1468-00004	5W5Q4	GP1K-33	1FM-44	Diode RF Filter
C10	.002	200	72315		ZZW1D2	GP2M-002	68P27	Audio Coupling
C11	.02	200	71928				68P15	AF Screen Bypass
C12	180		56653			GP2K-180		Audio Coupling
C13	.005	400	70606		ZYW4D5	GP2M-005	68P6	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	2 Meg.	½	73948			Volume control

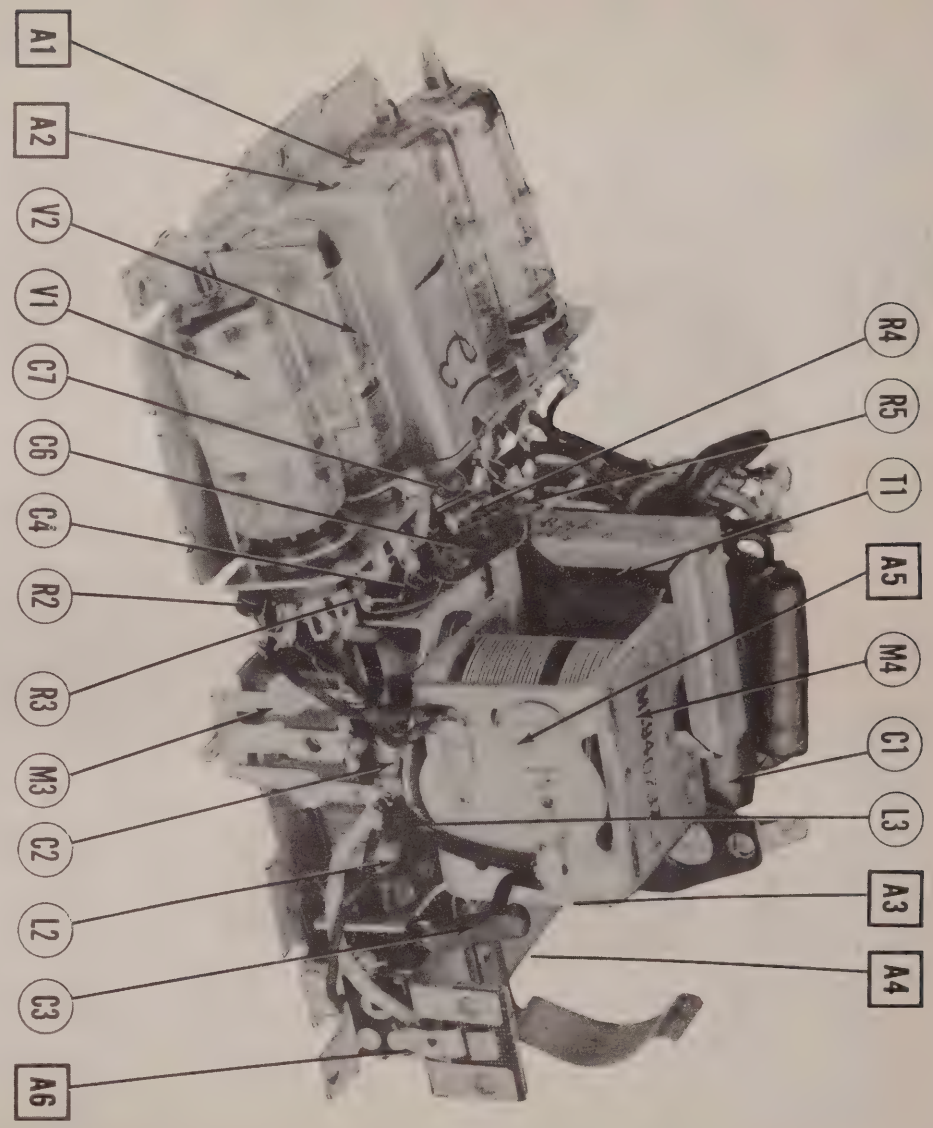
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½		BTS-100K	Osc. Grid
R3	15KΩ	½		BTS-15K	Osc. Anode
R4	4.7 Meg.	½		BTS-4.7 Meg.	IF Grid
R5	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R6	68KΩ	½		BTS-68K	Diode Filter
R7	10 Meg.	½		BTS-10 Meg.	AF Grid
R8	4.7 Meg.	½		BTS-4.7 Meg.	AF Screen
R9	1 Meg.	½		BTS-1 Meg.	AF Plate
R10	3.3 Meg.	½		BTS-3.3 Meg.	Output Grid
R11	820Ω	½		BTS-820	Bias Network

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	14.5KΩ	20Ω	660Ω	2.8Ω	70440				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	20Ω	70428			
	CONE DIA.	V. C. DIA.				
SP2	1 3/4 " x 2 1/2"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1A	Loop Ant.	4Ω		73955		Model 8B42
B	Loop Ant.			73954		Model 8B41
C	Loop Ant.			73956		Model 8B43
L2	Osc. Coil	1Ω	4Ω	70443		
L3	Input IF	20Ω	20Ω	70442	16-6668	
L4	Output IF	39Ω	39Ω	70437	16-6669	

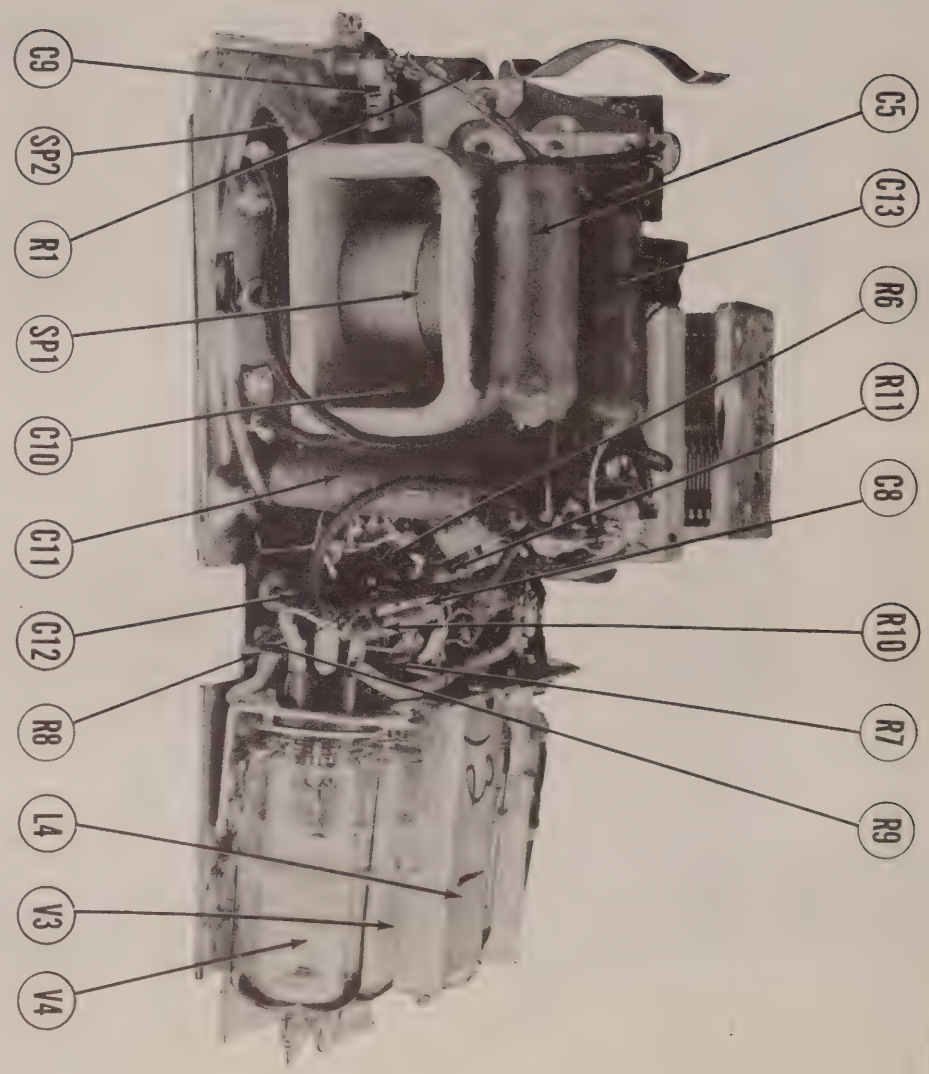
BATTERIES

ITEM No.	VOLTAGE	RCA PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	1.5V "A"	VS-001 or VS-036	950			2R			
M2	67.5V"B"	VS-016		467			XX45		

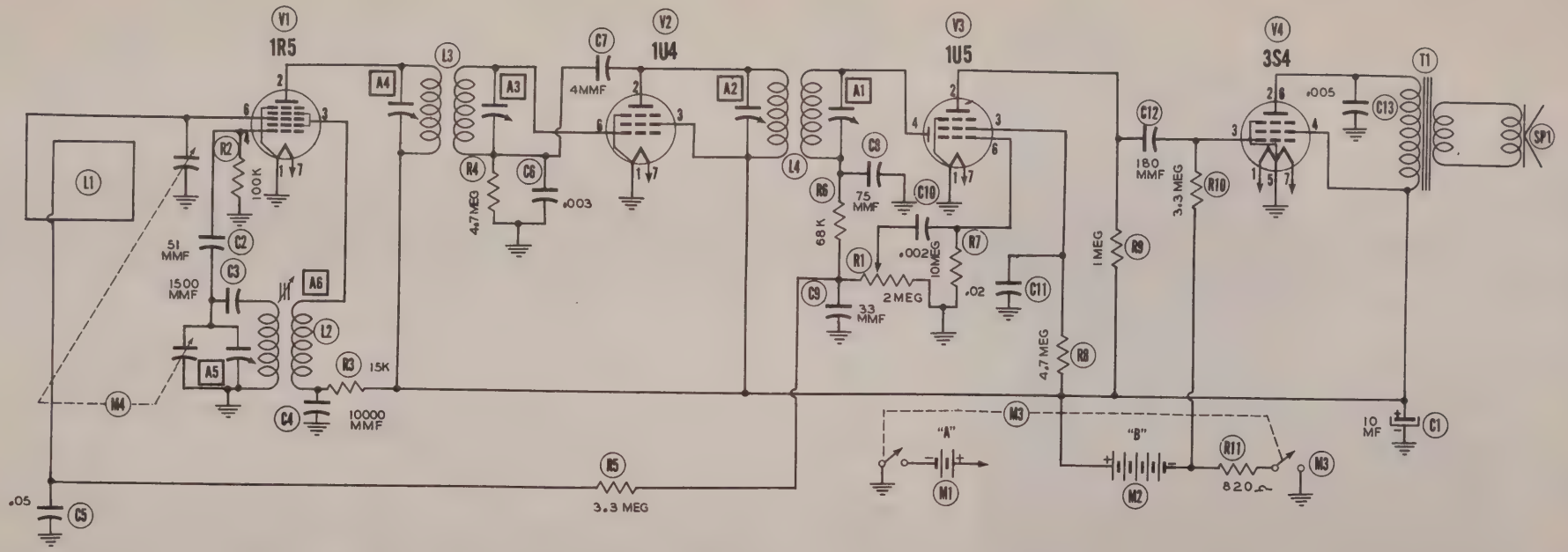
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M3	Switch	73945	On-Off
M4	2 Gang Var. Cap.	73947	(9-290MMF, 13-133MMF)
	Knob	73936	Tuning
	Knob	73946	Volume

CHASSIS—BOTTOM VIEW



RCA VICTOR MODEL 8B42



IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V	55VDC	30VDC	§-2.7VDC	0V	0V	1.5VDC
V 2	1U4	0V	55VDC	55VDC	30VDC	0V	0V	1.5VDC
V 3	1U5	0V	15VDC	12VDC	0V	0V	0V	1.5VDC
V 4	3S4	1.5VDC	50VDC	-.7VDC	55VDC	0V	50VDC	1.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†20Ω	†15KΩ	100KΩ	*	5Meg.	*
V 2	1U4	*	†20Ω	†0Ω	†15KΩ	*	4.7Meg.	*
V 3	1U5	*	†1Meg.	†4.7Meg.	2Meg.	2Meg.	10Meg.	*
V 4	3S4	*	†660Ω	3.3Meg.	†0Ω	*	†660Ω	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEARURED FROM PIN 4 OF V4

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC voltage measurments are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODEL 9022 (Ch. 132.871)

SILVERTONE
MODEL 9022 (Ch. 132.871)

SILVERTONE
MODEL 9022 (Ch. 132.871)

SILVERTONE MODEL 9022

TRADE NAME	Silvertone, Model 9022 (Ch. 132.871)
SUPPLIER	Sears, Roebuck and Co., 925 S. Homan St., Chicago, Illinois
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES(EIGHT)	Types 6BA6 FM RF Amp., 6BE6 AM Converter, 12AT7 FM Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6T8 DET-AVC-AF, 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY 105-120 Volts AC	RATING: .38 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 540-1600KC	FREQ. MOD. 88-108MC

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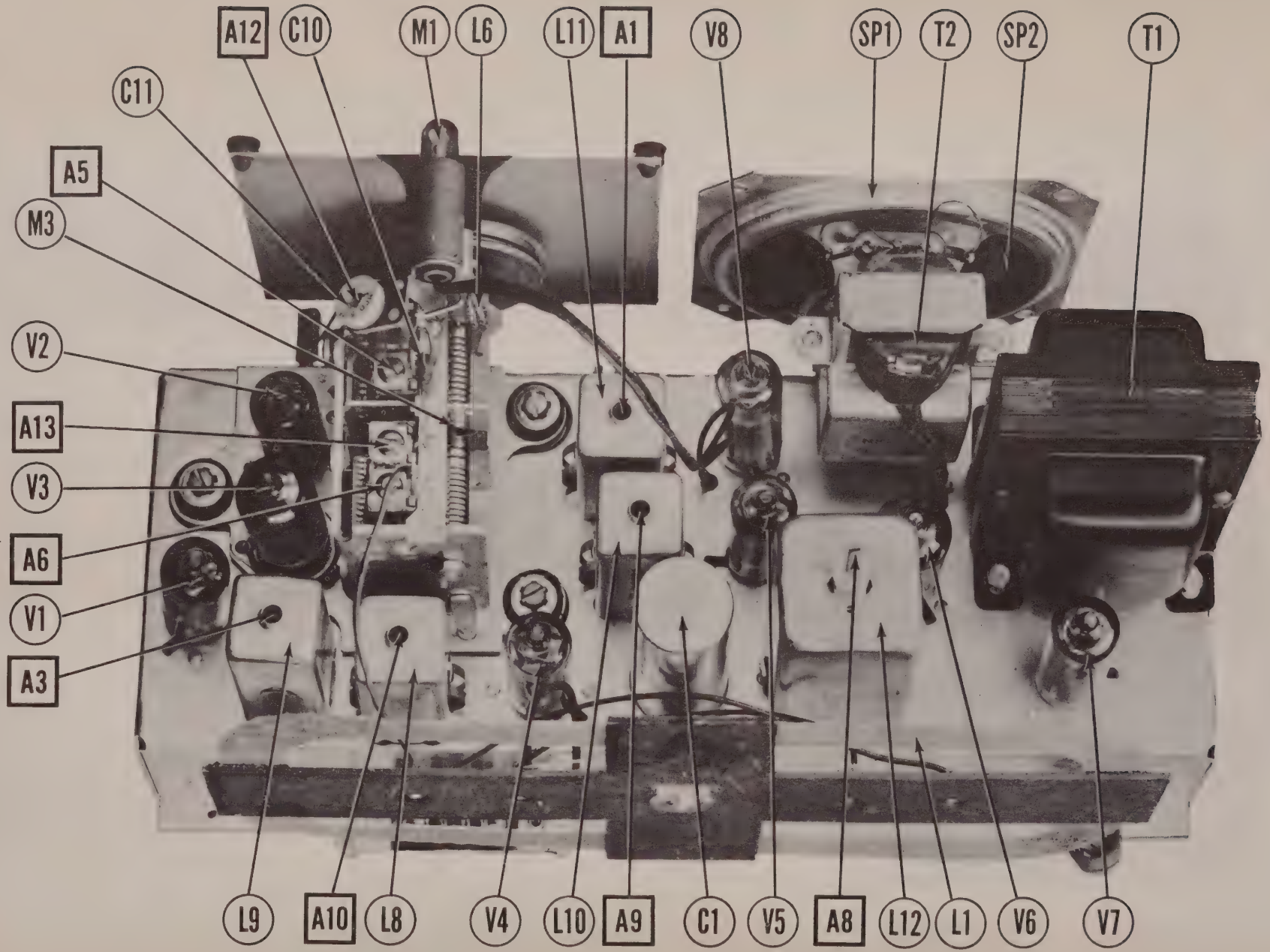
A12
C10
M1
L6
L11
A1
V8
SP1
T2
SP2
T1
C11
A5
M3
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V3
A6
V1
A3
L9
A10
L8
V4
L10
A9
C1
V5
A8
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L1
V6
V7

C15
R10
C13
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R21
C28
C27
R23
B
R20
A7
R18
C25
R16
C23
R13
C20
C21
R7
C14
R12
R30
C17
A11
C4

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BA6	6BA6	7BK	
V2	AM Converter	6BE6	6BE6	7CH	
V3	FM Converter	12AT7	12AT7	9A	
V4	1st IF Amp.	6BA6	6BA6	7BK	
V5	2nd FM IF Amp.	6BA6	6BA6	7BK	
V6	DET.-AVC-AF	6T8	6T8	9E	
V7	Power Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	250	N22601	AF844F	UP22135		EL-354	■ Filter
B	20	250						▲ Filter
C	20	250						Filter
C2	10	25	N22602	PRS25/10	BR102A		TVA-5	Output Cathode Bypass
C3	4	25	N22659	PRS150/4	BR550		TVA-13	Stabilizing Cap.
C4	47			1468-00005	5W5Q5	GP1K-47	1FM-45	RF Coupling
C5	5000			1467-005	1D5D5	811-005	29C1	FM RF Cathode Bypass
C6	10000			P488-01	GT4S1	821-01	36C1	FM RF Screen Bypass
C7	100			1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C8	1000			1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C9	1000			1468-001	1W5D1	GP2L-001	1FM-21	FM Conv. Cathode Bypass
C10	1.5					NPOK-1.5		FM Osc. Coupling
C11	5-25		N22724			557-NP0-5-25		Variable Trimmer
C12	50			1468-00005	5W5Q5	GP1K-50	1FM-45	Osc. Grid Cap.
C13	1000			1468-001	1W5D1	GP2L-001	1FM-21	FM Osc. Feedback
C14	1000			1468-001	1W5D1	GP2L-001	1FM-21	FM Conv. Decoupling
C15	47			1468-00005	5W5Q5	GP1K-47	1FM-45	AM Osc. Grid Cap.
C16	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	AM Conv. Screen Bypass
C17	.05	200		P288-05	GT2S5		TM-15	AVC Filter
C18	5000			1467-005	1D5D5	811-005	29C1	AVC Filter
C19	1000			1468-001	1W5D1	GP2L-001	1FM-21	AVC Filter
C20	5000			1467-005	1D5D5	811-005	29C1	1st IF Cathode Bypass
C21	10000			P488-01	GT4S1	821-01	36C1	1st IF Screen Bypass
C22	5000			1467-005	1D5D5	811-005	29C1	1st IF Decoupling
C23	15			1468-000025	5W5Q2	GP1K-15	MS-415	IF Coupling
C24	5000			1467-005	1D5D5	811-005	29C1	2nd IF Cathode Bypass
C25	10000			P488-01	GT4S1	821-01	36C1	2nd IF Screen Bypass
C26	5000			1467-005	1D5D5	811-005	29C1	2nd IF Decoupling
C27	100			1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C28	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode Load Cap.
C29	.003	600		P688-003	GT6D3	GP2M-003	TM-23	De-emphasis
C30	100			1468-0001	5W5T1	GP1K-100	1FM-31	RF Filter
C31	220			1468-00025	5W5T25	GP2K-220	1FM-325	AF Grid Bypass
C32	100			1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C33	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C34	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C35	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Output Plate Bypass
C36	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N22603	Q13-133	M-60-Z	Volume control
B	Switch			76-1	SW-A	Attach to R1A per instructions

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	AM Loop Ant.	0Ω	2Ω	N22586	
L2	RF Choke	.1Ω		N22648	
L3	RF Choke	.1Ω		N21445	
L4	FM Osc. Cath. Chk.	.2Ω			
L5	FM RF Coil	0Ω		N22593	
L6	FM Osc.	0Ω		N22594	
L7	AM Osc.	.5Ω	7Ω	N22587	14-1060
L8	FM 1st IF	.1Ω	.1Ω	N22590	
L9	AM 1st IF	10Ω	10Ω	N22352-1	16-6678
L10	FM 2nd IF	.8Ω		N22591	
L11	AM 2nd IF	10Ω	10Ω	N22352-1	16-6678
L12	Ratio Det. Trans.	1Ω	.1Ω	N22592	
L13	Fil. Choke	1Ω		N21673	
L14	FM Parasitic Supp.	0Ω		N22335-1	
L15	AM Parasitic Supp.	0Ω		N22334-1	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	Switch	N22596	Band
M3	2 Gang. Var. Cap.	N22600	(20-383MMF, 31-179MMF)
	Dial Scale	N22581	
	Dial Pointer	N19226-1	
	Cabinet	N19426	
	Knob	N22604-3A	On/Off-Volume
	Knob	N22604-3B	Band
	Knob	N22604-3C	Tuning

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
R2	68Ω	±			FM RF Cathode
R3	27KΩ	1		BTA-27K	FM RF Screen Dropping
R4	2200Ω	±		BTS-2200	FM Conv. Cathode
R5	22KΩ	±		BTS-22K	FM Osc. Grid
R6	1000Ω	±		BTS-1000	FM Osc. Plate Decoupling
R7	1000Ω	±		BTS-1000	FM Conv. Plate Decoupling
R8	1000Ω	±		BTS-1000	FM RF Decoupling
R9	47Ω	±		BW-½-47	Parasitic Suppressor
R10	22KΩ	±		BTS-22K	AM Osc. Grid
R11	8200Ω	1		BTA-8200	AM Conv. Screen Dropping
R12	1 Meg.	±		BTS-1 Meg.	AVC Network
R13	68Ω	±			1st IF Cathode
R14	10KΩ	1		BTA-10K	1st IF Screen Dropping
R15	1000Ω	±		BTS-1000	1st IF Decoupling
R16	100KΩ	±		BTS-100K	2nd IF Grid
R17	68Ω	±			2nd IF Cathode
R18	3300Ω	1		BTA-3300	2nd IF Screen Dropping
R19	1000Ω	±		BTS-1000	2nd IF Decoupling
R20	180Ω	±			Balancing
R21	39KΩ	±		BTS-39K	De-emphasis
R22	1 Meg.	±		BTS-1 Meg.	AVC Network
R23	220KΩ	±		BTS-220K	AVC Network
R24	100KΩ	±		BTS-100K	AVC Network
R25	15KΩ	±		BTS-15K	Ratio Detector Diode Load
R26	10 Meg.	±		BTS-10 Meg.	AF Grid
R27	330KΩ	±		BTS-330K	AF Plate Load
R28	470KΩ	±		BTS-470K	Output Grid
R29	270Ω	1		BW-1-270	Output Cathode
R30A	500Ω	5	N22624	ABA-1000	Filter See Note
B	500Ω				Filter

Note: On IRC replacement set slider at midpoint.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .38A	380VCT .022ADC	6.3VAC @ 3.2A		N22589	P-6119 †	P-3048 †	

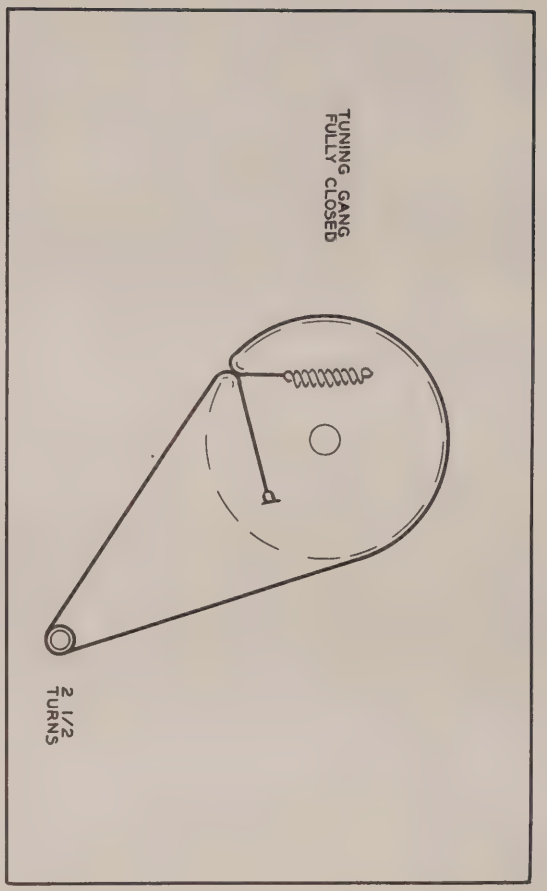
† Mount vertically with universal mounting brackets and add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	7500Ω	3.7Ω	270Ω	.3Ω	N22588	A-3878#	A-2931#	RO-13#	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM	V. C. IMP. 3.7Ω	N22595	ST-113 §▲ MOD.P4-X	4A07§	§ Remount output transformer. ▲ Drill and tap magnet frame.
SP2	CONE DIA. 3 7/8"	V. C. DIA. 9/16"				



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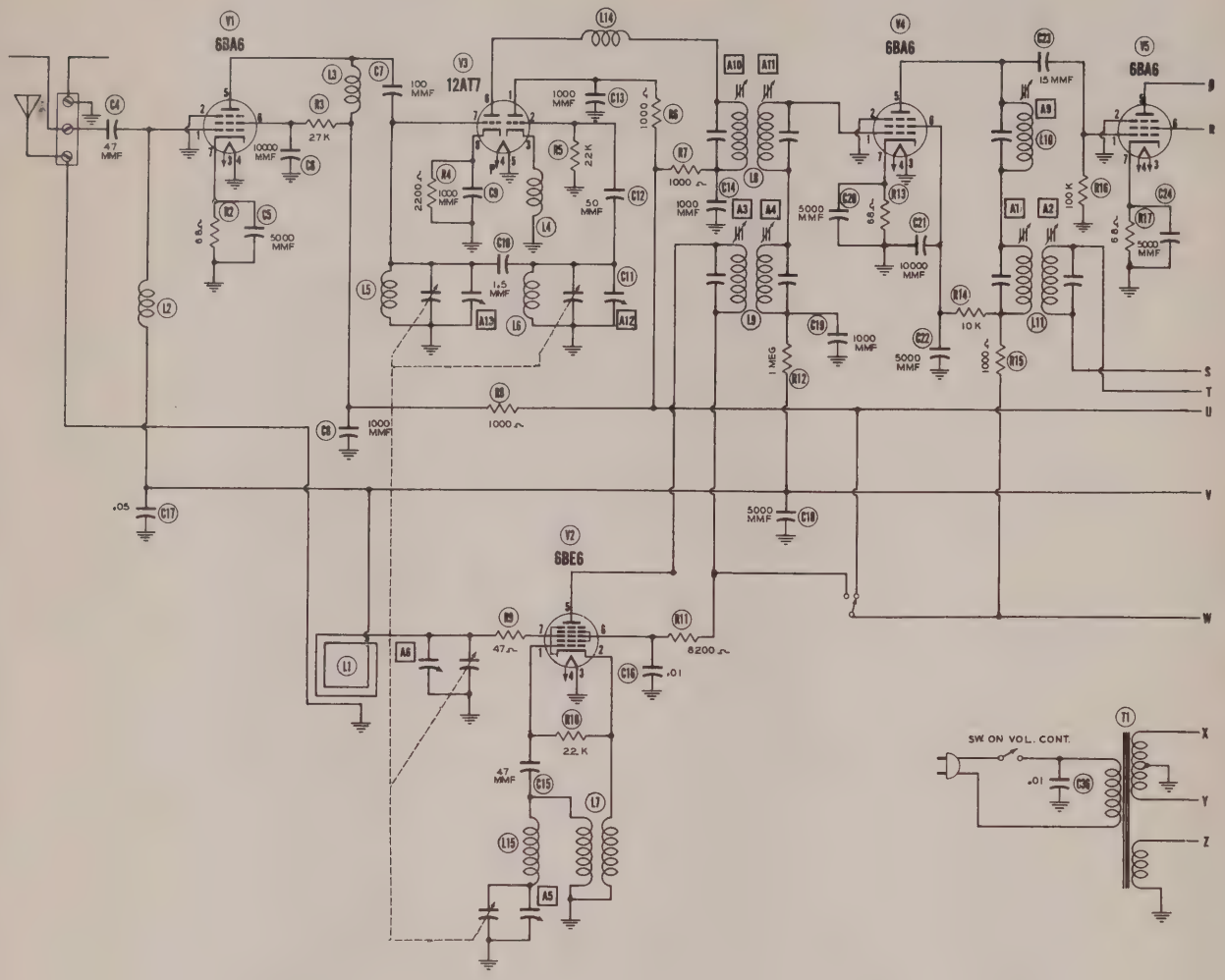

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	V1	6BA6	-.2VDC	0V	0V	6.3VAC	130VDC	65VDC	.6VDC		
	V2	6BE6	§-8.8VDC	0V	0V	6.3VAC	170VDC	107VDC	-.9VDC		
‡	V3	12AT7	135VDC	§-.3VDC	0V	6.3VAC	6.3VAC	138VDC	0V	3VDC	0V
	V4	6BA6	-.1VDC	0V	0V	6.3VAC	160VDC	127VDC	.9VDC		
‡	V5	6BA6	0V	0V	0V	6.3VAC	125VDC	107VDC	1.1VDC		
	V6A	6T8	-.3VDC	-.7VDC	-.3VDC	0V	6.3VAC	-.6VDC	0V	-.6VDC	55VDC
‡	V6B	6T8	-.3VDC	-.8VDC	-.9VDC	0V	6.3VAC	-.6VDC	0V	-.6VDC	50VDC
	V7	6AQ5	0V	7.8VDC	0V	6.3VAC	192VDC	175VDC	0V		
	V8	6X4	195VAC	‡140VDC	0V	6.3VAC	175VDC	195VAC	200VDC		

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	V1	6BA6	100KΩ	0Ω	0Ω	.1Ω	†2KΩ	†30KΩ	68Ω		
	V2	6BE6	22KΩ	.5Ω	0Ω	.1Ω	†1000Ω	†9.2KΩ	1.5 Meg.		
‡	V3	12AT7	12KΩ	22KΩ	.1Ω	.1Ω	.1Ω	†2KΩ	0Ω	2.2KΩ	0Ω
	V4	6BA6	2.5 Meg.	0Ω	0Ω	.1Ω	†2KΩ	†12KΩ	68Ω		
‡	V5	6BA6	100KΩ	0Ω	0Ω	.1Ω	†2KΩ	†5.3KΩ	68Ω		
	V6A	6T8	Inf.	15KΩ	Inf.	0Ω	.1Ω	500KΩ	0Ω	10 Meg.	1330KΩ
‡	V6B	6T8	540KΩ	15KΩ	540KΩ	0Ω	.1Ω	Inf.	0Ω	10 Meg.	1330KΩ
	V7	6AQ5	470KΩ	270Ω	0Ω	.1Ω	†250Ω	†1000Ω	470KΩ		
	V8	6X4	180Ω	†#1000Ω	0Ω	.1Ω	†1000Ω	180Ω	95KΩ		

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
† Measured from pin 7 of V8.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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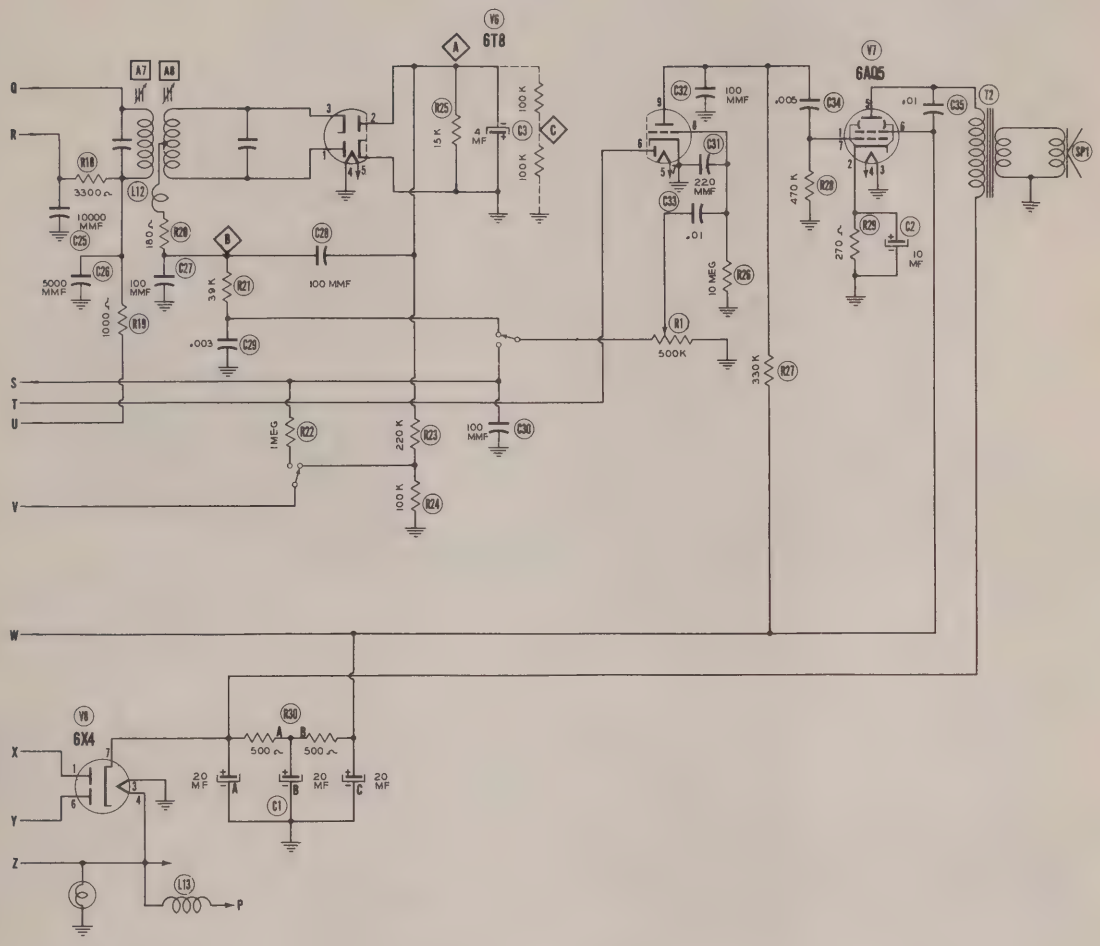

IF=455 KC AM

IF=10.7 MC FM

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial.
When complete receiver alignment is to be performed, the order given should be followed.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 12AT7 (V3). Low side to chassis.	455KC (400∿ Mod.)	AM (counter clock-wise)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2.		Loop	1640KC (400∿ Mod.)	"	"	"	A4,A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	600KC (400∿ Mod.)	"	600KC	"		Check calibration. If signal is not received at 600KC on dial, bend the stator end plates of oscillator section of the tuning gang. Repeat steps 2 and 3 until dial tracks properly.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point ◇A to chassis. The junction of these two resistors is alignment Point ◇C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (Grid) of 6BA6 (V4). Low side to chassis.	10.7MC (Unmod.)	FM (clock-wise)	Tuning gang fully open	DC Probe to Point ◇A Common to chassis.	A7,A9	Adjust for maximum deflection.
5.	.05MFD	High side to pin 7 (Grid) of 12AT7 (V3). Low side to chassis.	"	"	"	"	A10, A11	"
6.	.05MFD	"	"	"	"	DC Probe to Point ◇B Common to Point ◇C	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (Grid) of 6BA6 (V4). Low side to chassis.	10.7MC (450KC Sweep)	FM (clock-wise)	Point of non-interference	Vert.Amp to Point ◇A Low side to chassis.	A7,A8, A9	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per Fig 1.
5.	.05MFD	High side to pin 7 (Grid) of 12AT7 (V3). Low side to chassis.	"	"	"	"	A10, A11	Adjust for maximum amplitude and symmetry as per Fig 1.
6.	.05MFD	"	"	"	"	Vert.Amp to Point ◇B Low side to chassis.	A6,A7	Reconnect capacitor C3. Adjust A6 so 10.7MC occurs at center of crossover lines as per Fig 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FIG. 1

FIG. 2

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two 150Ω carbon res.	High side thru 150Ω to "FM" antenna terminal. Low side thru 150Ω to chassis.	108.5MC (Unmod.)	FM	Tuning gang fully open	DC Probe to Point ◇B Common to chassis.	A12	Adjust for maximum deflection.
8.	"	"	105MC (Unmod.)	"	105MC	"	A13	Adjust for maximum deflection. Rock tuning gang.
9.	"	"	87.5MC (Unmod.)	"	Tuning gang fully closed closed	"		Check to see that max. deflection occurs with tuning gang fully closed. If necessary expand or compress oscillator coil turns for maximum deflection. Repeat steps 8 and 9 until no further improvement can be made.

THORDARSON
MODELS T-32W00, T-32W10

THORDARSON
MODELS T-32W00, T-32W10

TRADE NAME	Thordarson, Models T-32W00, T-32W10
MANUFACTURER	Thordarson Elect. Mfg., Div. of Maguire Ind., Inc., 500 West Huron St., Chicago, Ill.
TYPE SET	AC Operated Audio Amplifier and Plug-in Pre-Amplifier
TUBES (FIVE)	Types 6SL7GT AF Amp.-Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier, 12AT7 Pre-Amp.
POWER SUPPLY	110-120 Volts AC RATING: .66 Amp. @ 117 Volts AC

MODEL T-32W10

INPUT CONNECTIONS

The amplifier has one high impedence input channel marked PHONO-TUNER. Connect the output of the AM-FM tuner or crystal phono pickup to the amplifier input jack marked PHONO-TUNER by means of a low capacity, single conductor, shielded lead, using the input plug provided. To drive the amplifier to full rated output, the tuner or phono pickup should be capable of delivering approximately 1 volt of signal.

An additional octal socket marked PLUG-IN PRE-AMP is provided on the amplifier chassis to accomodate a Model T-32W00 plug-in pre-amp and equalizer stage if operation is desired with a magnetic reluctance type pickup cartridge.

OUTPUT CONNECTIONS

The speaker voice coil connections are made to the terminal board marked SPEAKER located on the rear apron of the amplifier. Contacts of the speaker terminal board to be used to match the various speaker impedences are as follows: Connect to 1 and 2 for 3.4 to 4 ohms, connect to 1 and 3 for 6 to 8 ohms, connect to 1 and 4 for 15 to 16 ohms.

MODEL T-32W00

INSTALLATION

Insert the pre-amp securely into the chassis socket marked PLUG-IN PRE-AMP. Fasten the pre-amp grounding strap to the amplifier chassis by means of the 6/32 self threading screw located adjacent to the octal socket. Connect the magnetic phono pickup to the pre-amp input, using the plug provided. The output of the pre-amp has been brought out to a connector marked PRE-AMP OUTPUT located on the rear apron of the T-32W10 chassis. Connect the PRE-AMP OUTPUT to the PHONO-TUNER by means of a short insulated wire.

The T-32W00 may also be used as a microphone pre-amp by connecting together pins 4 and 5 of the octal socket. This removes the bass equalization.

The T-32W00 may also be utilized with other equipment by providing an octal socket with the correct connections. The voltage requirments are 6.3 V @ .3 A and 250 V @ 1.5 MA. Under no circumstances apply more than 250 volts B+.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

THORDARSON
MODEL T-32W00

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.-Phase Inverter	6SL7GT	6SL7GT	8BD	
V2	Power Output	6V6GT	6V6GT	7AC	
V3	Power Output	6V6GT	6V6GT	7AC	
V4	Rectifier	5Y3GT	5Y3GT	5T	
V5	Pre Amp.	12AT7	12AT7	9A	Used on model T-32W00

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: THORDARSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450	CE-2007	AF44J	UP2245		EL-220	Filter
B	20	450						Filter
C2	10	450	CE-451-106	PRS450/10	BR1045		UT-10	Decoupling
C3	50	50	CE-50-506	PRS50/50	BR505		TA-550	Output Cathode Bypass
C4	.002	600	CP-401-202	P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C5	.03	400	CP-401-303	P488-03	GT4S3		TM-13	Tone Compensation
C6	.005	400	CP-401-502	P688-005	GT6D5	GP2M-005	TM-25	Tone Compensation
C7	.1	400	CP-401-104	P488-1	GT4P1		TM-1	Audio Coupling
C8	.1	400	CP-401-104	P488-1	GT4P1		TM-1	Audio Coupling
C9	.05	400	CP-401-503	P488-05	GT4S5		TM-15	Line Filter
C10	10	150	CE-151-106	PRS150/2	BR1215		UT-121	Pre-Amp. Plate Dec. Note
C11	.005	400	CP-401-502M	P485-005	ZYW4D5	GP2M-005	68P6	Audio Coupling Note
C12	.01	400	CP-401-103M	P485-01	ZNW4S1	GP2-335-01	68P8	Audio Coupling Note
C13	1000	500	CM-401-102	1468-001	1W5D1	GP2L-001	1FM-21	AF Feedback Note

Note. Used in T-32W00 plug-in pre-amplifier and equalizer stage for magnetic pick-up cartridges.

CONTROLS

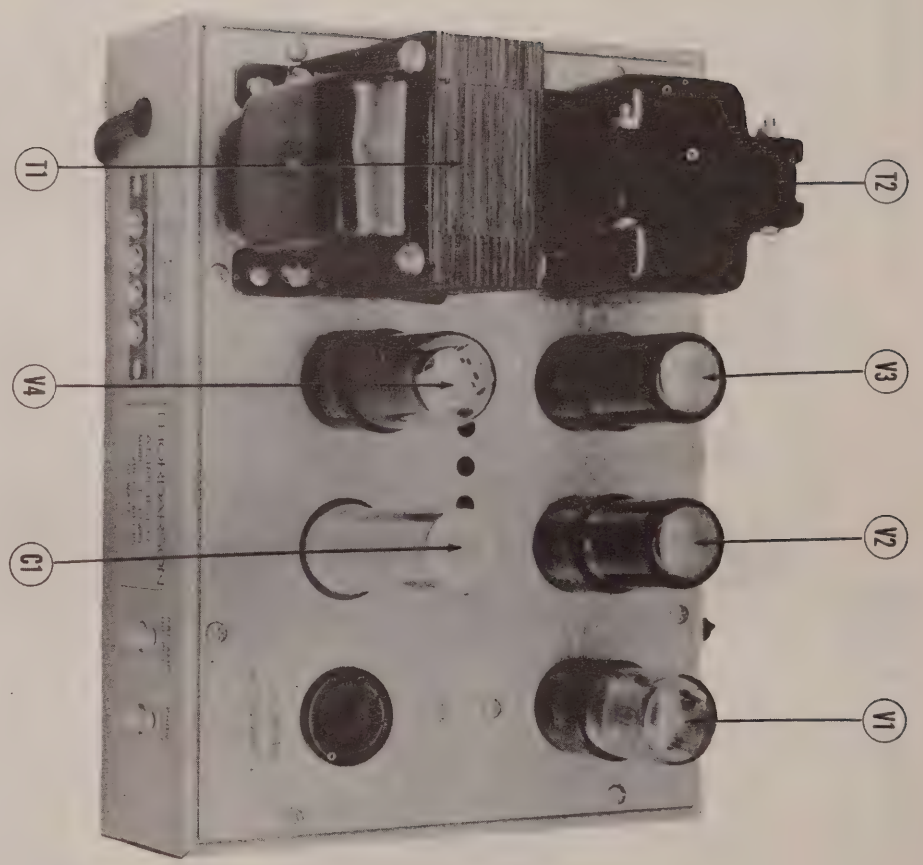
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: THORDARSON PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½	RCP-1-105	Q13-137	M-63-Z	Volume control
R2	500KΩ	½	RCP-1-504	Q13-133	M-60-Z	Treble control
R3A	1 Meg.	½	RCP-1-105S	Q13-137	M-63-Z	Bass control
B	Switch		Not Req.	76-1	SW-A	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: THORDARSON PART No.	IRC PART No.	IDENTIFICATION CODES
R4	100KΩ	½	RC½ 104	BTS-100K	Tone Compensation
R5	2200Ω	½	RC½ 222	BTS-2200	AF Cathode
R6	220KΩ	½	RC½ 224	BTS-220K	AF Plate
R7	2200Ω	½	RC½ 222	BTS-2200	Phase Inv. Cathode
R8	220KΩ	½	RC½ 224	BTS-220K	Phase Inv. Plate
R9	470KΩ	½	RC½ 474	BTS-470K	Output Grid
R10	18KΩ	½	RC½ 183	BTS-18K	Output Grid
R11	470KΩ	½	RC½ 474	BTS-470K	Output Grid
R12	250Ω	10	RW-10-251	AB-250	Output Cathode Wire Wound
R13	47KΩ	½	RC½ 473	BTS-47K	Feedback
R14	47KΩ	1	RC½ 473	BTA-47K	Filter
R15	20KΩ	10	RW-10-203	AB-20K	Bleeder Wire Wound
R16	1 Meg.	½	RC½ 105	BTS-1 Meg.	Pre Amp. Grid See Note
R17	2200Ω	½	RC½ 222	BTS-2200	Pre Amp. Cathode See Note
R18	220KΩ	½	RC½ 224	BTS-220K	Pre Amp. Plate See Note
R19	4.7 Meg.	½	RC½ 475	BTS-4.7 Meg.	Pre Amp. Grid See Note
R20	220KΩ	½	RC½ 224	BTS-220K	Pre Amp. Plate See Note
R21	220KΩ	½	RC½ 224	BTS-220K	Voltage Divider See Note
R22	100KΩ	½	RC½ 104	BTS-100K	Pre Amp. Decoupling See Note
R23	220KΩ	½	RC½ 224	BTS-220K	Feedback See Note

Note. Used only on model T-32W00 plug-in pre-amplifier and equalizer stage for magnetic pick-up cartridges.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	THORDARSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .66A	700VCT .094ADC	5VAC @ 2A	6.3VAC @ 1.2A	TS-24R02-U	P-4079 †	P-3152 †	PV-70 †

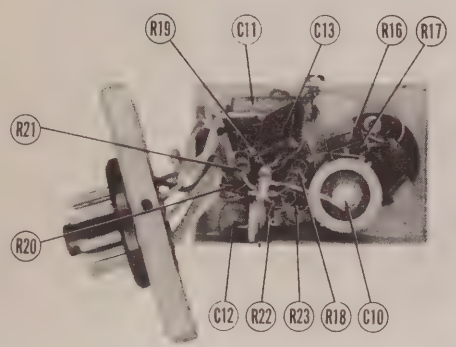
† Drill new mounting holes.

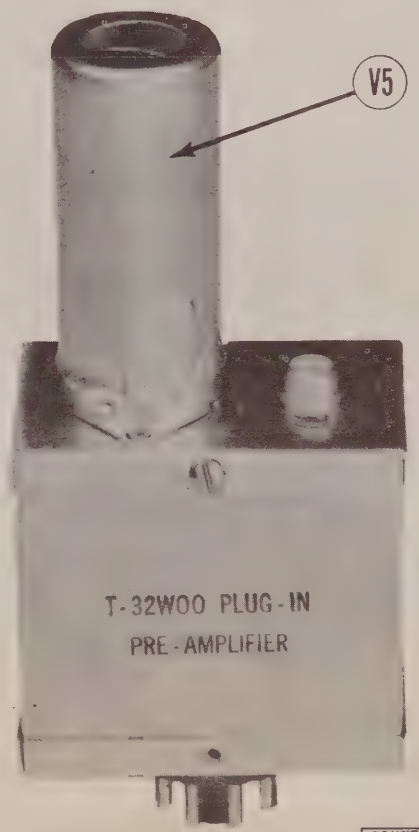
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		THORDARSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	9.2KΩ CT	4Ω 8Ω 16Ω	525Ω CT	.3Ω .5Ω .7Ω	T-51690A	A-3304	A-3128	PCO-150 †	† Drill new mounting holes

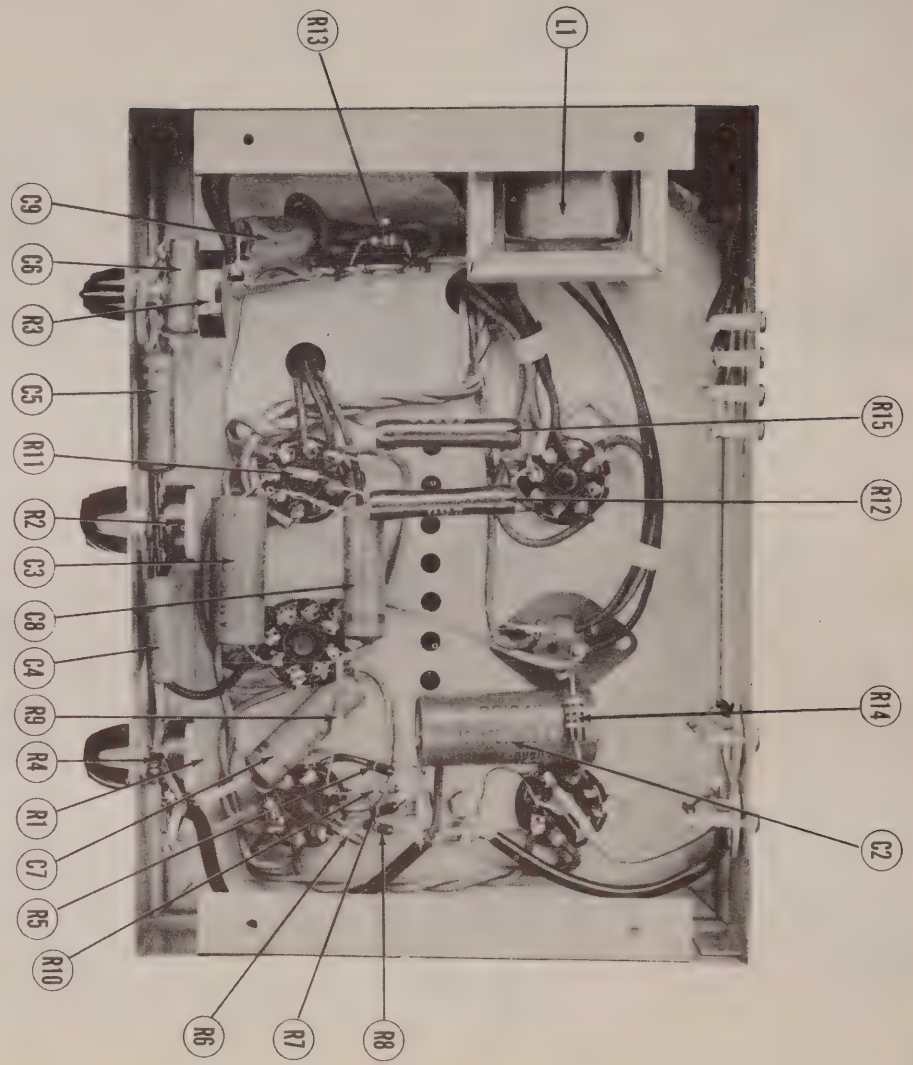
FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	THORDARSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.094A	390Ω	8.8Henries	T-20C53	C-1002 ‡	C-2990 ‡	R-8120 ‡	‡ Drill one new mounting hole.





CHASSIS—BOTTOM VIEW



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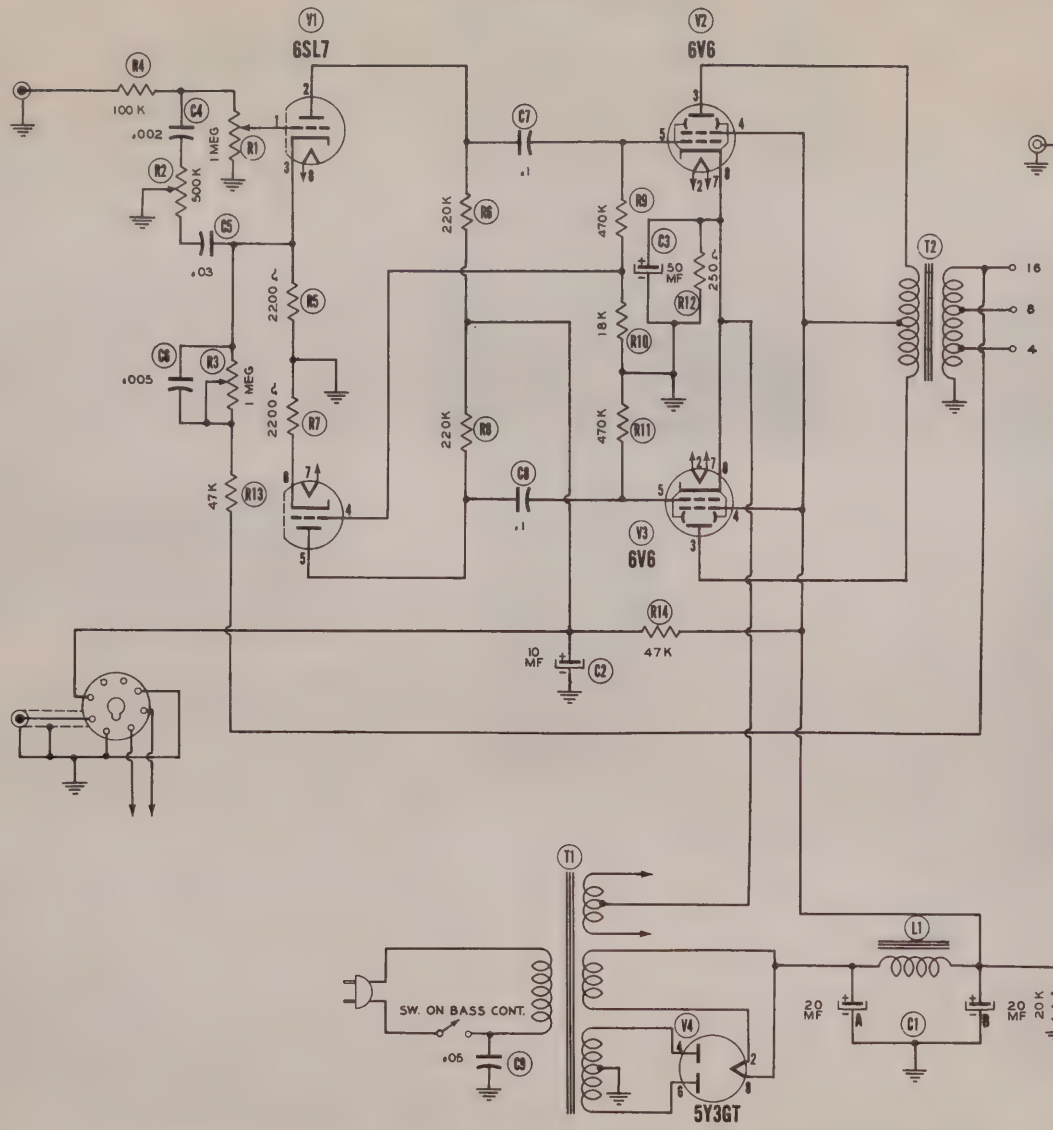

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SL7GT	0V	105VDC	1.4VDC	0V	105VDC	1.4VDC	#	#	
V 2	6V6GT	0V	#	300VDC	315VDC	.1VDC	105VDC	#	20VDC	
V 3	6V6GT	0V	#	300VDC	315VDC	.1VDC	20VDC	#	20VDC	
V 4	5Y3GT	117VAC	350VDC	0V	350VAC	0V	350VAC	0V	350VDC	
V 5	12AT7	40VDC	0V	.2VDC	#	#	30VDC	.3VDC	0V	#

6.3VAC MEASURED ACROSS FILAMENT PINS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SL7GT	2Ω	†270KΩ	2.2KΩ	18KΩ	†270KΩ	2.2KΩ	250Ω	250Ω	
V 2	6V6GT	0Ω	250Ω	†700Ω	†380Ω	480KΩ	†270KΩ	250Ω	250Ω	
V 3	6V6GT	0Ω	250Ω	†700Ω	†380Ω	470KΩ	250Ω	250Ω	250Ω	
V 4	5Y3GT	Inf.	20KΩ	Inf.	220Ω	Inf.	210Ω	0Ω	20KΩ	
V 5	12AT7	†350KΩ	1Meg.	2.2KΩ	250Ω	250Ω	†350KΩ	4.7Meg.	0Ω	250Ω

† MEASURED FROM PIN 8 OF V4

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All control at minimum, proper output load connected.

FIG. 1—CABINET VIEW

GENERAL INFORMATION

The Wireway Model WP is a combination record player and magnetic recorder-reproducer. The dual purpose take-up drum serves as a turntable for standard 78 RPM discs up to 12″ in diameter. The recording mechanism will accommodate standard wire spools, which may contain up to a full hour of recording time. Wire speed is two feet per second past the record-reproduce head, except in *Rewind,* when the direct-driven rewind motor takes up the wire at about eight times the forward speed.

A broadcast oscillator is incorporated in the circuit to allow broadcasting of microphone, phonograph records, or wire to any radio up to 150 feet. Provision is made for easy connection to the voice coil of any radio or P.A. system for direct recording.

The Wireway is designed to operate on 105 to 120 volts, 60-cycle, AC only. Any other source of electrical power will damage the set. Special Wireways are available for 110-volt, 50-cycle, and 220-volt, 50-cycle.

Manufactured by **WIRE RECORDING CORPORATION OF AMERICA**
76 Varick Street • New York 13, New York

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WIREWAY
MODEL WP

WIREWAY
MODEL WP

DATE 11/49 SET #76 FOLDER #19

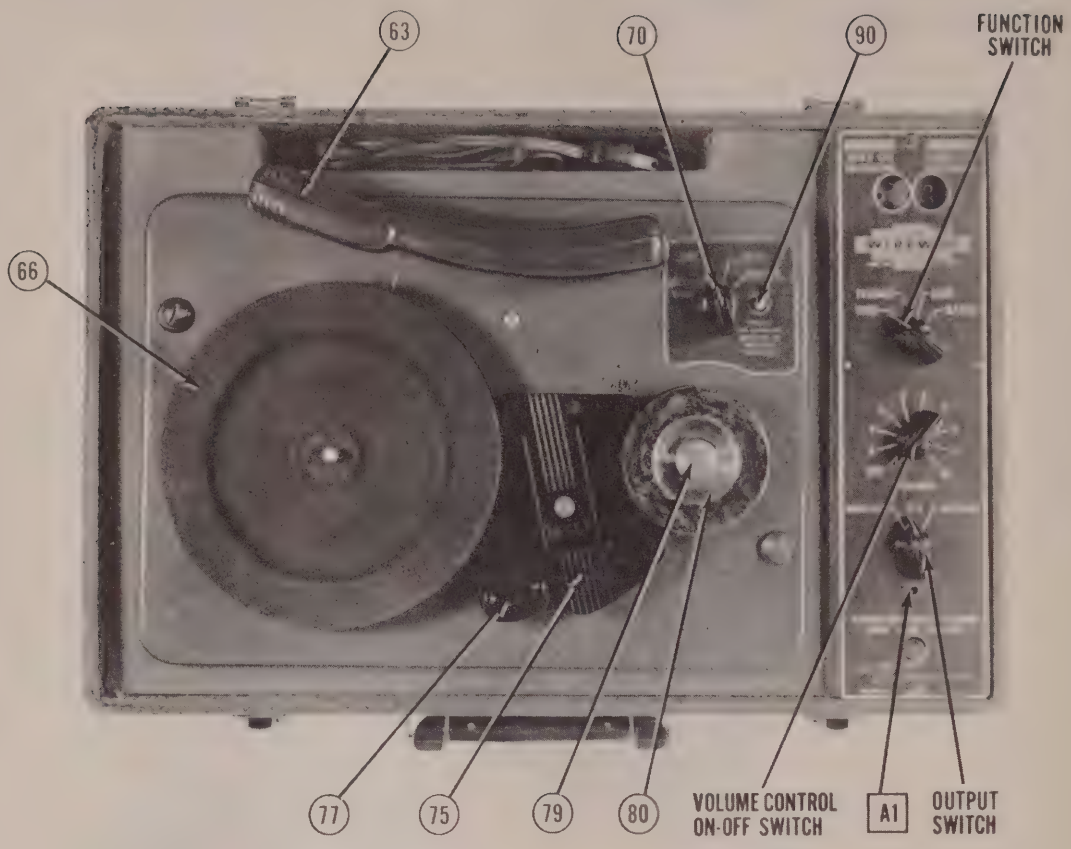


FIG. 2—COMPLETE UNIT

Mechanical Service Notes • Parts Lists Page Twelve

MECHANICAL OPERATION

Before the wire is threaded on the machine, the recording head should be brought to the top part of its level-winding cycle. This may be done simply by running the turntable in the normal manner. The wire spool is placed on the Rewind Hub (80); press down firmly until it is seated. The end of the plastic leader on the spool is then pulled past the recorder head (77) and placed in the groove of the turntable (66). Press against the inner edge of the groove, rotating the turntable about two full turns.

CAUTION: The plastic leader must be flatly and smoothly wound on the turntable without humps or doubling; otherwise, the wire will have pronounced speed change in playback. Press the "Reset Button" to be sure that the switch it controls (which is in the common lead of the two motors) is closed.

Turning the *Control Switch* to *Play* or *Record* causes the turntable to revolve; thus, the wire is wound off the supply spool and past the recording head, which slowly moves up and down, level winding the wire. To rewind wire on to the supply spool, turn the Control Switch to the "Rewind" position. By turning the Control Switch to "Play" from "Rewind," the turntable should smoothly and evenly reverse its direction.

MECHANICAL SERVICE NOTES

FUNCTION OF MAJOR PARTS:

Control Switch (91)

Controls Motors: Record, Off, Play, or Rewind. In "Play," "Off," and "Rewind," it grounds output filter to prevent superimposed signal being recorded without proper bias when switch is not in "Record" position. In "Record" it grounds the cathode of 40KC bias and erase oscillator to complete "B" voltage circuit of that oscillator.

Reset Button and Automatic Switch (76)

The Reset Button resets the Automatic stop switch (76) which is in the common lead of both the forward and rewind motors. This Automatic switch should be tripped by the plastic leader at each end of the wire when it goes past the recording head.

Eccentric Washer (100)

This eccentric washer prevents the idler pulley (114) from wedging too deeply when switching from "Rewind" to "Play" or "Off." This may be turned by the eccentric adjust screw, which is located directly beneath the pickup arm, so that the turntable is driven properly and is stopped smoothly when changing from "Rewind" to "Play" or "Off." To adjust, use a large screwdriver, or a coin.

Idler Pulley (114)

The idler pulley is driven by the forward motor shaft and, in turn, rim drives the turntable drum. It is held against the turntable by the Idler Tension Spring (108).

Solenoid (92)

The solenoid moves the idler control lever when the rewind motor is in operation, thus disengaging the idler from the turntable rim. It is connected in parallel with the rewind motor.

Level-Wind Assembly (119)

The Level-Wind Assembly permits even winding of wire on the turntable drum, or the supply spool, by means of a constant up-and-down motion. This motion is derived from a gear drive (107) at the bottom of the turntable shaft.

MECHANICAL ADJUSTMENTS

Each Wireway is fully adjusted and triple inspected before leaving the factory; however, rough handling in transportation may mean slight necessary adjustments before delivery to the customer. The following notes will guide you in putting the Wireway in proper working order.

Turntable Tension (Idler Tension)

Turn the control switch to the "Play" position, motor running, and without the wire on the machine. Turn the eccentric

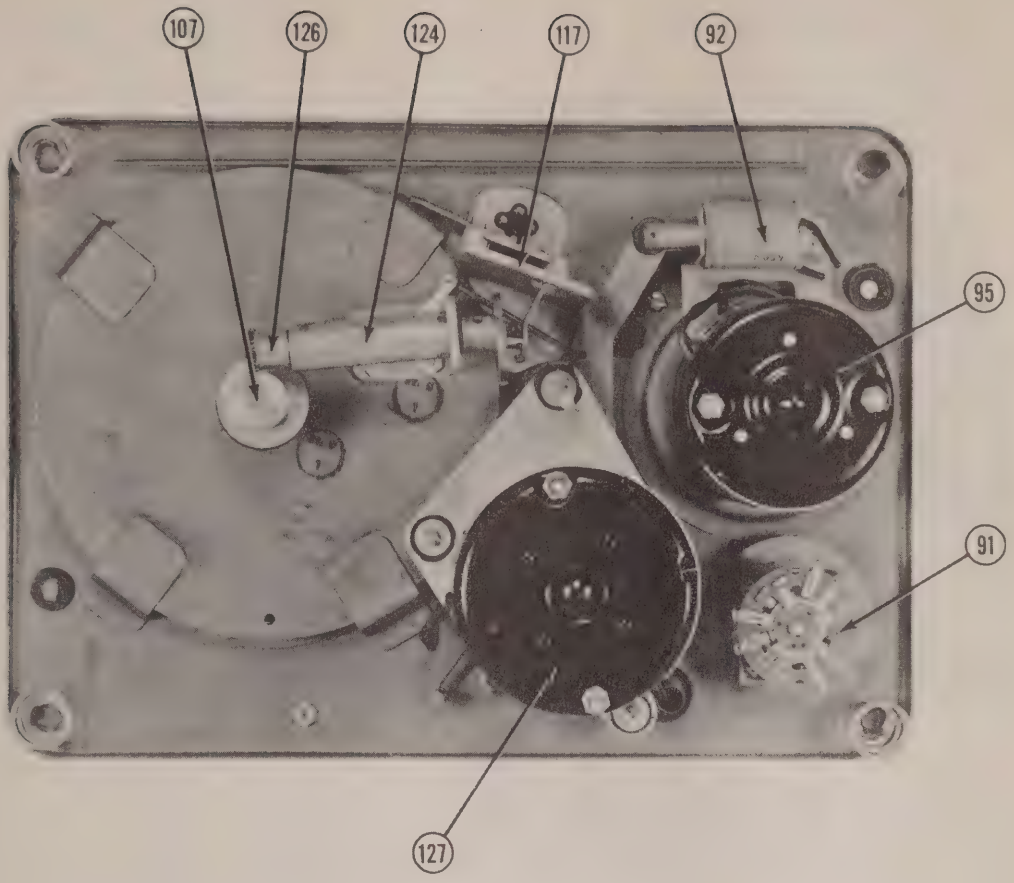


FIG. 3—MECHANICAL UNIT • BOTTOM VIEW

washer adjust screw (located on top of the chassis under the pickup arm), with a screwdriver, in a clockwise direction until the turntable stops rotating. Turn the eccentric adjust screw (counterclockwise) slowly until the turntable just turns smoothly. If screw is turned too far, the turntable will stop suddenly when changing from "Rewind" to "Play," causing the wire to break. Test for correct tension by running and switching from "Rewind" to "Play." Reversing action of the turntable should be smooth and there should be no overrunning of the supply spool by the turntable, or vice versa, when switching from one position to another. For fine adjustment, the eccentric adjust may be turned slightly in either direction.

Rewind Hub Tension

If slight "WOWS" should result, even though the turntable has been adjusted by means of the eccentric adjust screw, it may be caused by binding of the "Rewind" hub. Probable cause may be wire caught under hub, or too much pressure between hub and washers underneath it. Hub may be removed by turning the Rewind hub hold-down screw (79) counterclockwise and lifting the hub off the shaft. Lift off the felt washer (83) and the star spring washer (84). The star washer may be bent (slightly) to increase or decrease pressure. Bend only the three points of the star washer which have already been bent out of plane. Replace the star washer, bent points down. Replace felt washer, taking care that it is not gummy with dirt or grease. New washers may be moistened (not soaked) with about two drops of light machine oil.

Level Wind

The level-wind stroke should be spaced so that the wire winds evenly between upper and lower flanges of the turntable or supply spool. The level-wind slide (119) may be adjusted by loosening the two screws holding the pin extension (118) and moving the cam follower up or down until the proper height of recording head in level-winding cycle is obtained.

It is important that the wire wind on the turntable drum or rewind on to the supply spool *evenly;* that is, that it does not pile up noticeably near the lower flange, nor especially toward the top flange.

LUBRICATION

The following parts are lubricated *very* lightly with Lubriplate:

The level-wind slide (119), level-wind gear (126), drive worm (107), level-wind cam (125), and idler bracket (99).

The following parts are lubricated lightly with light machine oil:

Idler pulley bearing (114) (take care that no oil gets on the rubber rim), cam assembly shaft (126), rewind hub felt washer (83), and turntable shaft.

The drive edge of the turntable, the idler pulley, and the forward motor shaft must be free of grease, oil, dirt, etc.

To clean, moisten a cloth lightly with carbon tetrachloride and hold against drive edges.

CAUTION:

Carbon tetrachloride will hasten deterioration of the surfaces if not used sparingly and wiped dry quickly.

Electrical Service Notes • Parts Lists
Page Eleven

TO MAKE A RECORDING

It may be helpful to refer to Figure 2 when reading the following information.

In making a recording, the following procedure should be taken in order to have the best performance from your Wireway. See that the wire has been properly threaded on the turntable (66). See "Mechanical Operation."

Make sure the Output Switch is not in "PA" position when recording from microphone, or there will be an acoustic "feedback" (shrill whistle).

Now plug the microphone into the "Mike or Telephone" socket. Turn the Function Switch to "Mike" and the Volume Control about half-way up. Turn the Selector Switch Knob (70) to the "Record Wire" position. Be sure to press the release but-

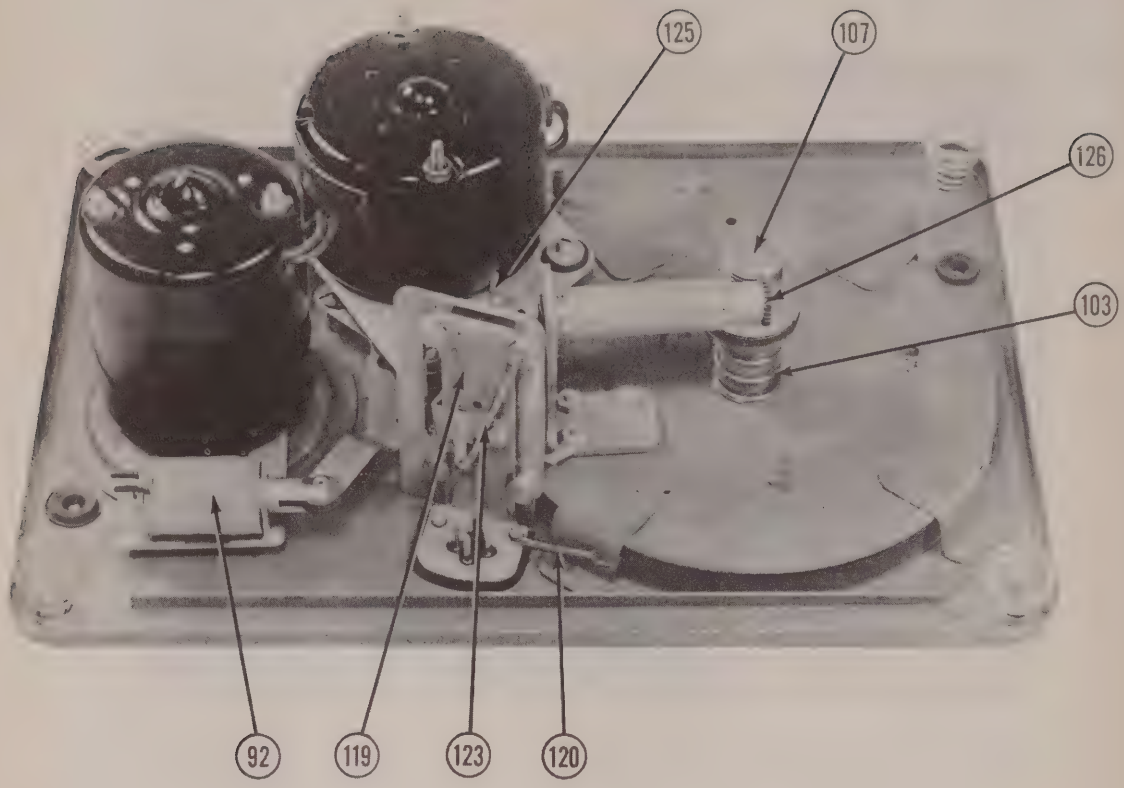


FIG. 4—MECHANICAL UNIT • FRONT VIEW

ton (90) (early models only) or the switch won't turn to "Record Wire." The Reset Button must always be down when recording, playing, or rewinding. It operates the automatic shutoff switch (76) when the wire has reached its end in either forward or reverse limits.

Hold the microphone about four or five inches from your mouth and speak in a clear, natural tone. While the recording is being made, the tiny lamp (62) will flash on peaks of sound. If this light flashes constantly, or burns steadily, you are too close to the microphone or the Volume Control is turned up too high. If the lamp does not light at all, you are too far away from the microphone or the Volume Control is not turned up high enough. Adjust the Volume Control accordingly.

After the recording has been made, turn the selector switch knob (70) to the rewind position, and the Function Switch to "Wire." Be sure the Output Switch is turned to *"Speaker,"* to hear the recording backward, which provides a key to the beginning of the recording, and you can stop the rewind then.

When the recording has been rewound, turn the Selector Switch Knob (70) to "Play" position, keeping the Function Switch in the "Wire" position, and adjust the Volume Control to the desired level.

Recording from Phonograph Disc

Place a disc on the turntable (66), and place the pickup arm (68) at the start of the disc.

Turn the Function Switch to "Phono" and turn up the Volume Control about half way.

Turn the Selector Switch Knob (70) to "Record Wire." The disc is now being recorded. In order to hear the disc while being recorded, turn the Output Switch to "Speaker."

After the disc has been recorded, *remove the disc,* turn the Function Switch to "Wire," the Output Switch to "Speaker," and rewind the wire. When the recording has been rewound, turn the Selector Switch Knob (70) to Play.

Broadcasting

The Wireway has a broadcast oscillator whose signal can be picked up by any radio within 150 feet, and is adjusted at the factory to 610 kilocycles. Be sure to unwind the antenna hank. Turn the Output Switch to "Broadcast."

To readjust, if necessary, tune your radio to a blank spot at the lower end of the dial. Above the lamp (62) on the Wireway is a deeply imbedded frequency adjustment screw (A1). With a small screwdriver, turn the screw clockwise to lower the frequency, or counterclockwise to raise the frequency, until you hear the recording playing through the radio's loud speaker. The Wireway is now on the same frequency as the radio. If the Wireway is transported to another community, this operation may have to be repeated and another adjustment made, if there is a broadcast station on the frequency to which the Wireway has previously been adjusted. The Wireway will tune from approximately 550 to 1,000 kilocycles.

Care of Head

Dirt and grit may close up the groove of the record-reproduce head. To clean, use a stiff-bristle brush, such as a toothbrush, *moistened* with carbon tetrachloride.

WIRING DIAGRAMS FOR HEAD PHONES AND FOOT CONTROL SWITCH

For models WP-1501 to WP-2500, a circuit transfer phone jack is used with a standard output transformer. (See Figure 6.) For models WP-2500 and above, an opening type phone jack is used and no bridging transformer is required. (Shown in Figure 7.)

The schematic for the foot control switch and the connection points to the mechanical unit are shown in Figures 8 and 9.

To use the foot control for "Dictation," trip the "Reset" switch, turn the selector switch knob (70) to "Record" position, and press the foot control pedal to the floor. Take all pressure off the pedal to pause. Do Not Stop the Pedal in any Intermediate Position.

To rewind, press the "Reset" button and turn the Selector Switch Knob (70) to the "Rewind" position.

To edit, trip the "Reset" button, turn the selector switch to the "Play" position. The unit will now operate when the foot pedal is pressed all the way to the floor.

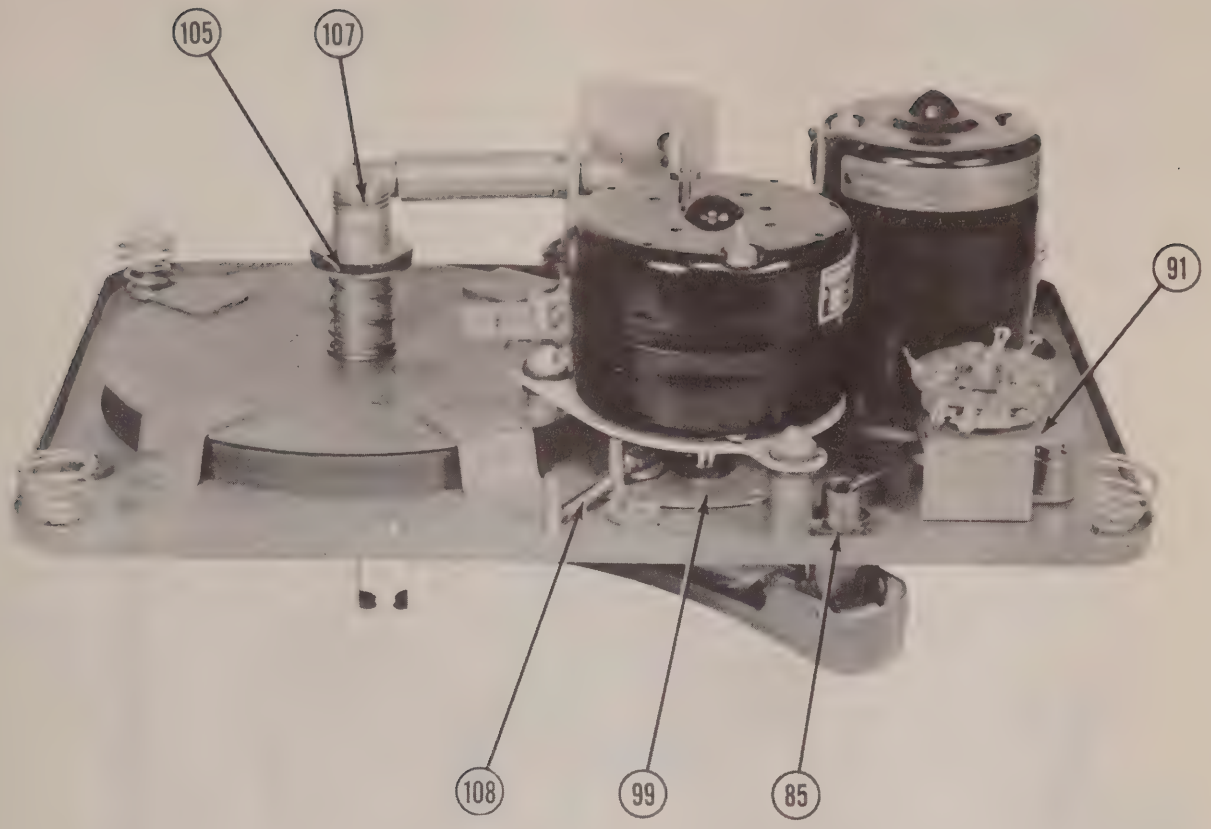


FIG. 5—MECHANICAL UNIT • BACK VIEW

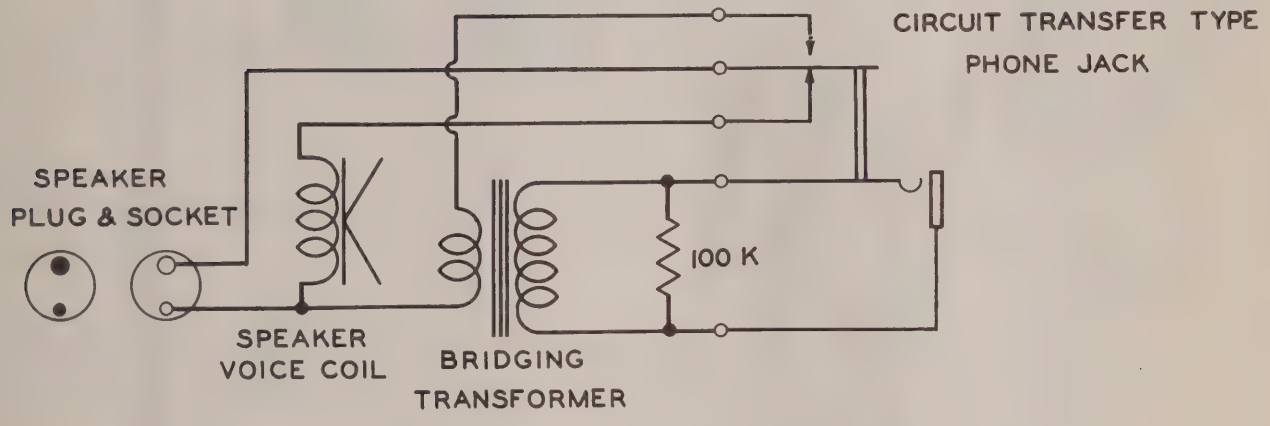


FIG. 6—HEAD PHONE CIRCUIT (SERIAL WP1501 TO WP2500)

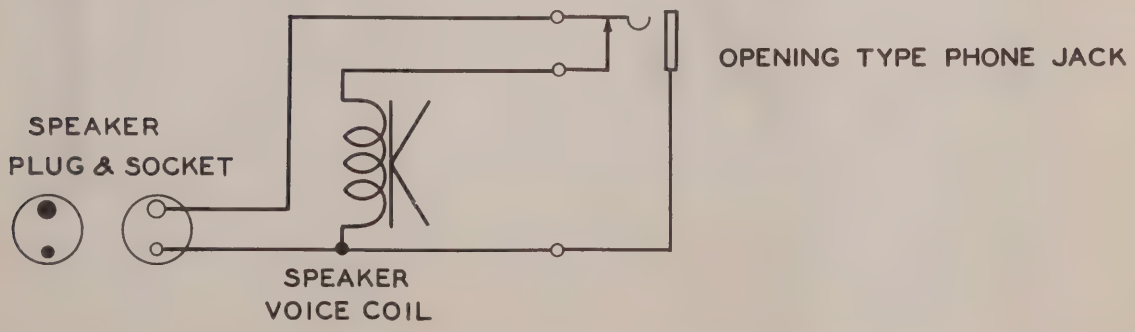
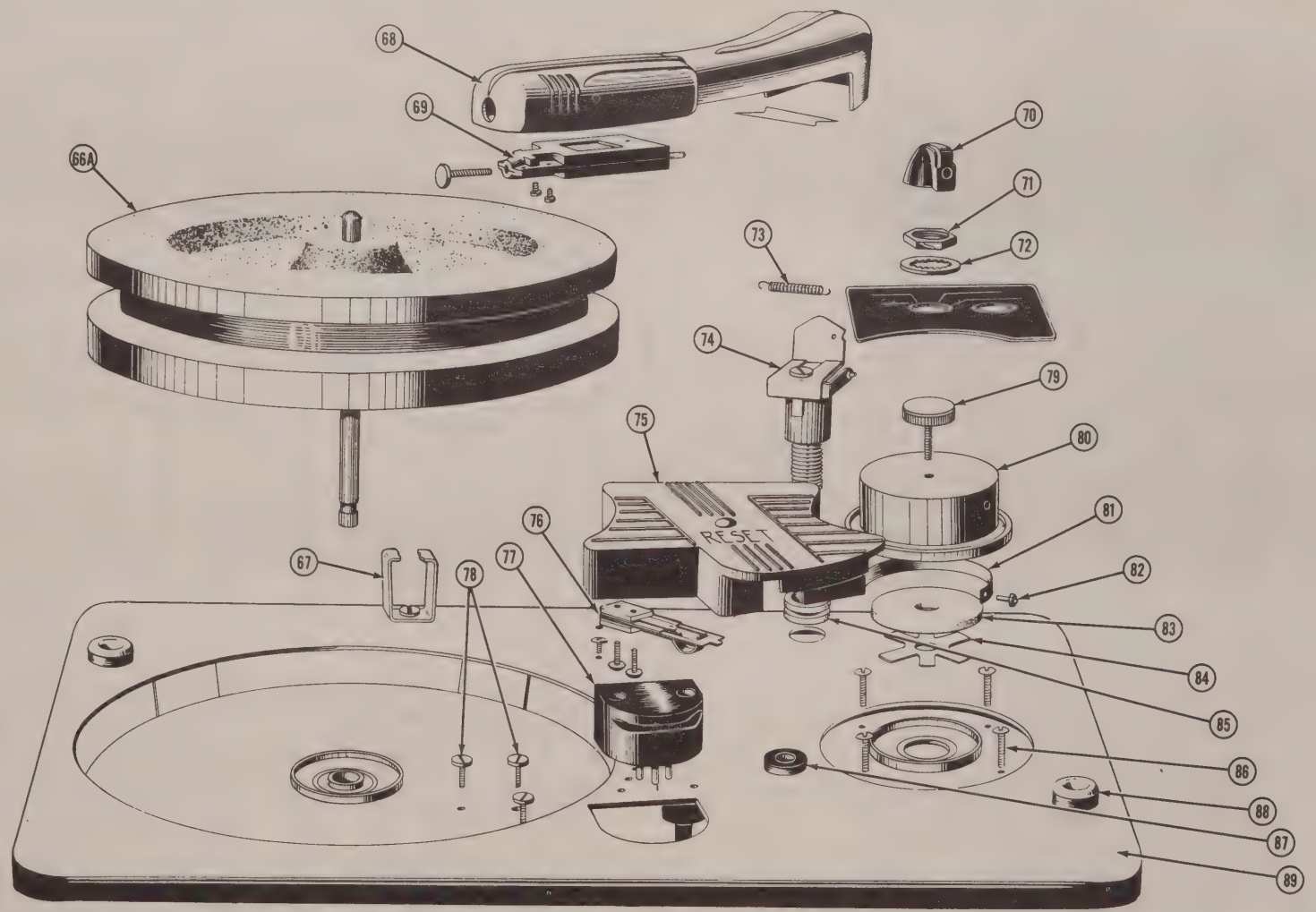


FIG. 7—HEAD PHONE CIRCUIT (SERIAL WP2500 AND ABOVE)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RESET

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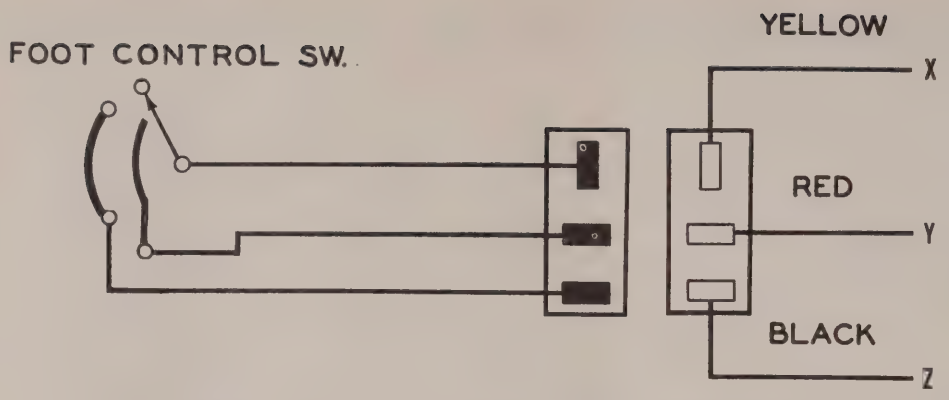


FIG. 8—WIRING DIAGRAM OF FOOT CONTROL SWITCH AND CONNECTOR

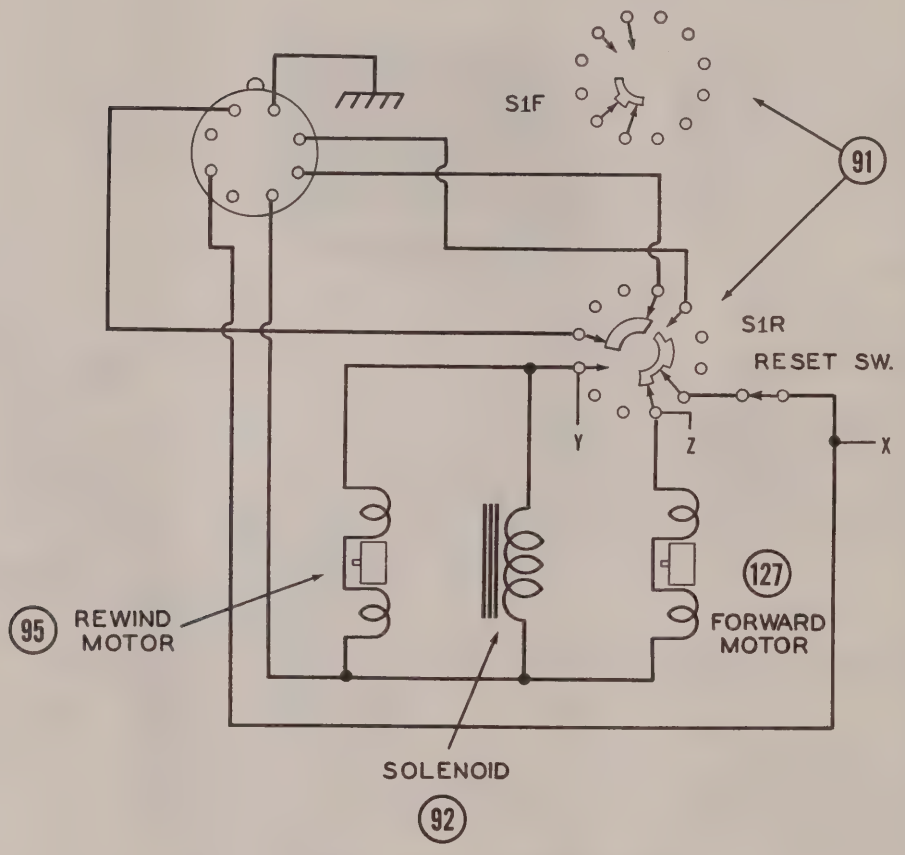


FIG. 9—WIRING DIAGRAM OF MECHANICAL UNIT

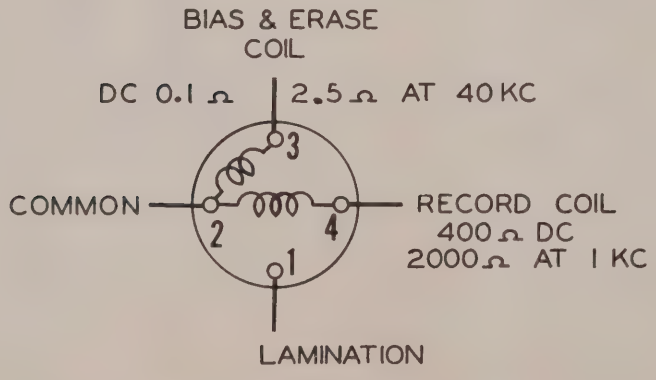


FIG. 10—DIAGRAM OF PICKUP HEAD

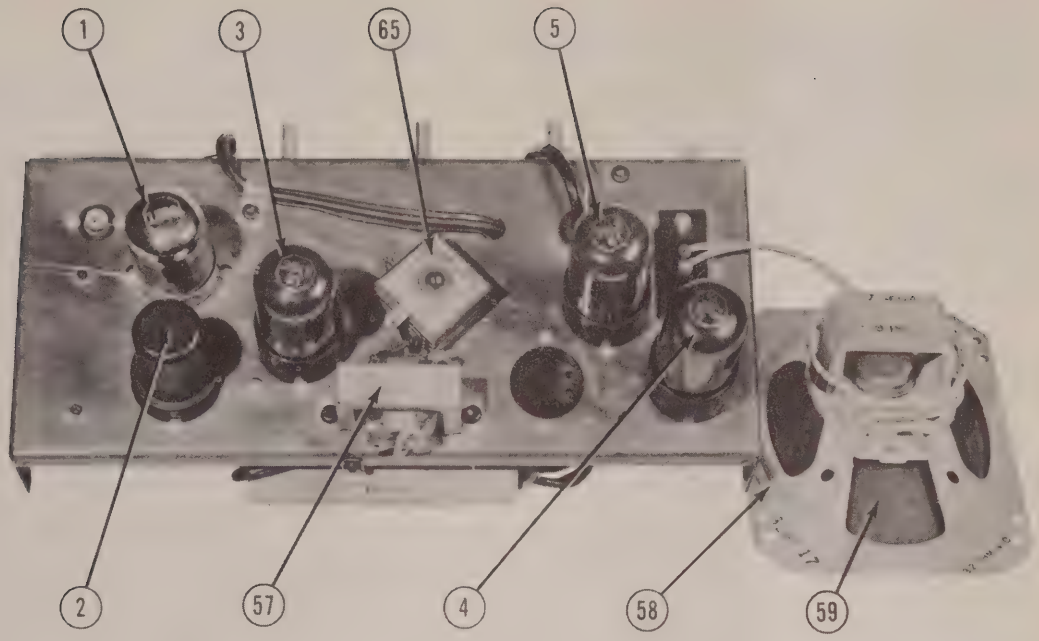


FIG. 11—TOP VIEW

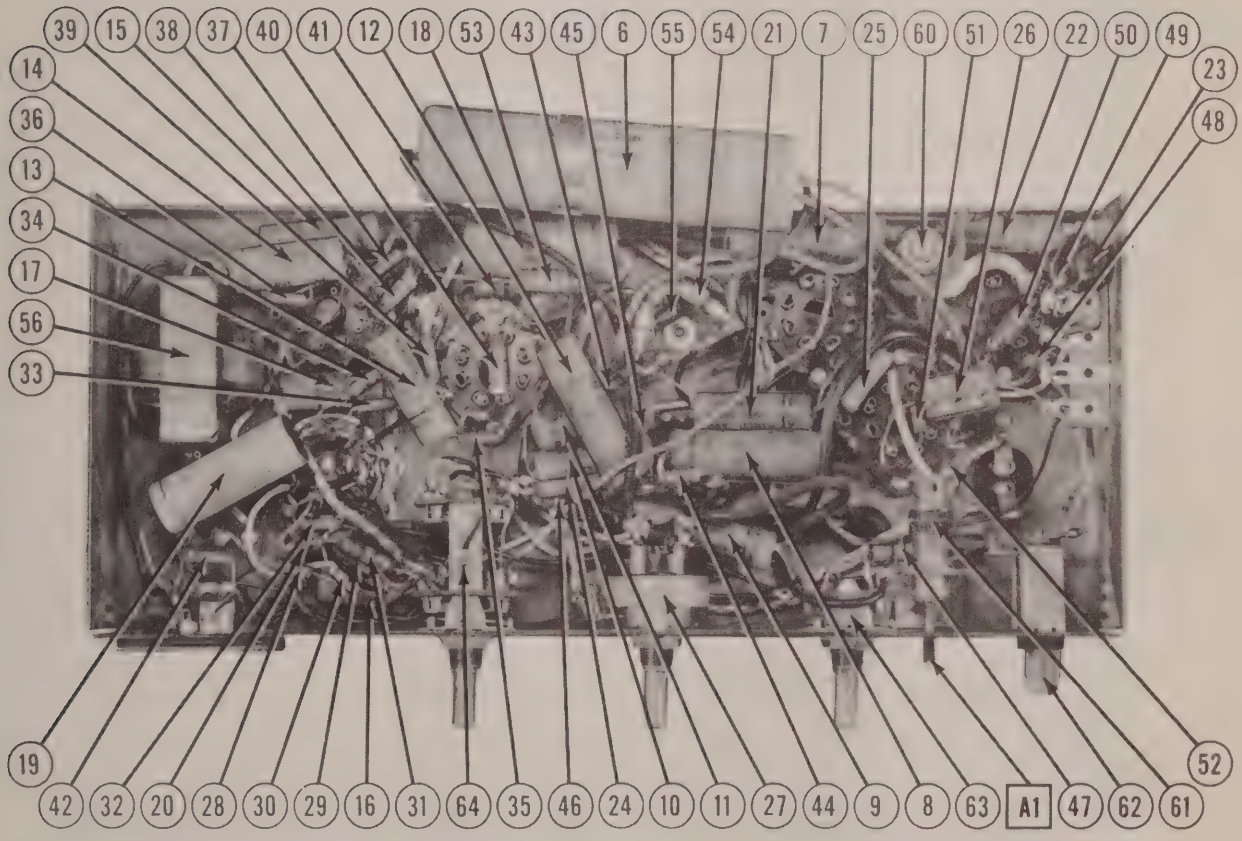
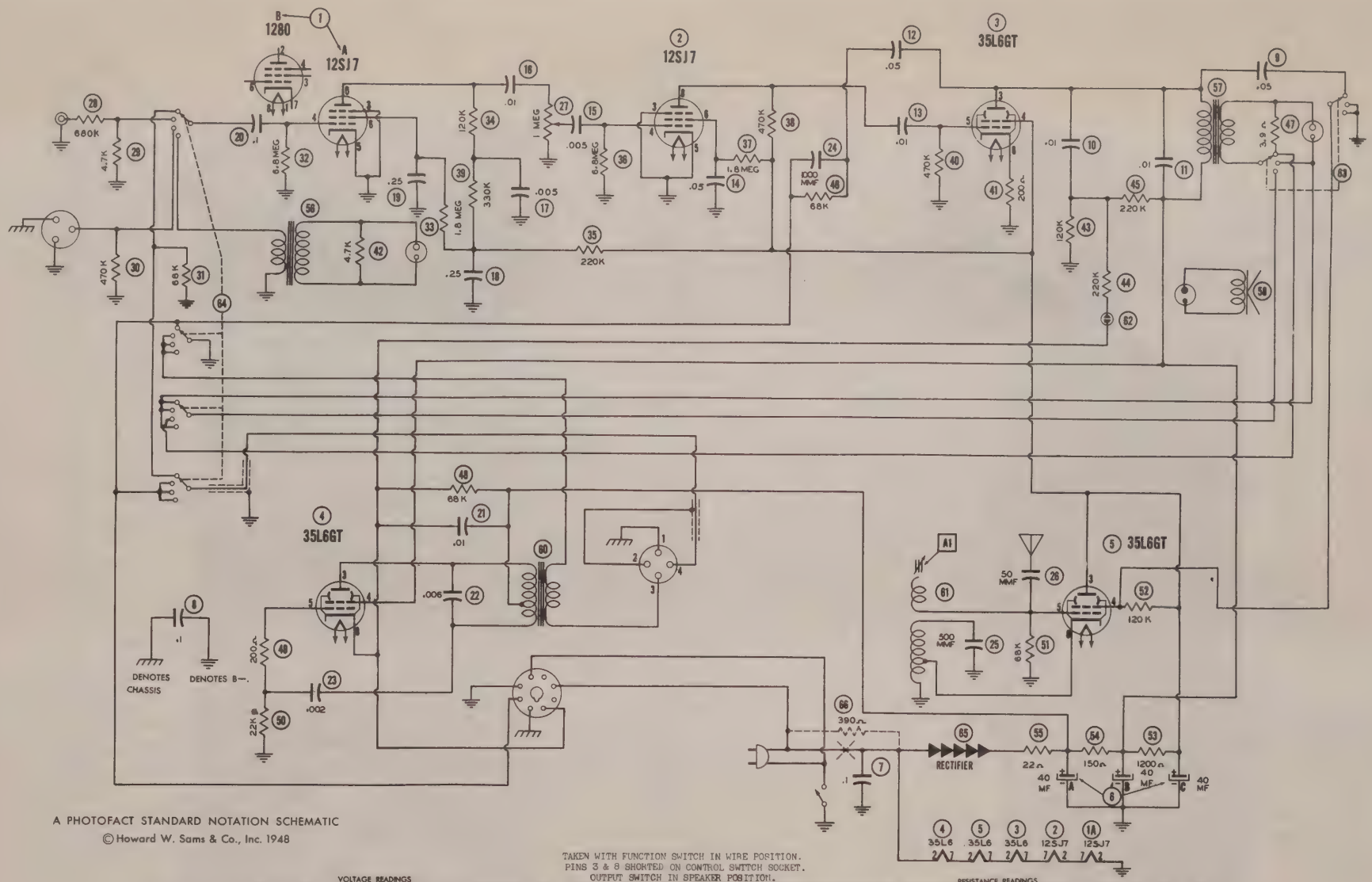


FIG. 12—UNDER CHASSIS VIEW



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TAKEN WITH FUNCTION SWITCH IN WIRE POSITION.
PINS 3 & 8 SHORTED ON CONTROL SWITCH SOCKET.
OUTPUT SWITCH IN SPEAKER POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	12SJ7	0V.	0V.	0V.	-.7VDC	0V.	14VDC	11VAC	12VDC
1B	1280	0V.	12VDC	14VDC	0V.	0V.	-.7VDC	0V.	11VAC
2	12SJ7GT	0V.	11VAC	0V.	-.8VDC	0V.	16VDC	25VAC	32VDC
3	35L6GT	0V.	55VAC	136VDC	125VDC	0V.	70VDC	25VAC	8VDC
4	35L6GT	0V.	90VAC	145VDC	135VDC	-34VDC§	-34VDC§	35VAC	0V.
5	35L6GT	0V.	117VAC	110VDC	80VDC	-8VDC§	0V.	90VAC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	12SJ7	0Ω	0Ω	0Ω	6.8 Meg.	0Ω	2 Meg.	12Ω	690KΩ
1B	1280	0Ω	690KΩ	2 Meg.	0Ω	0Ω	6.8 Meg.	0Ω	12Ω
2	12SJ7GT	0Ω	12Ω	0Ω	6.9 Meg.	0Ω	1.8 Meg.	27Ω	490KΩ
3	35L6GT	0Ω	60Ω	20KΩ	22KΩ	470KΩ	260KΩ	27Ω	200Ω
4	35L6GT	0Ω	90Ω	20KΩ	20KΩ	22KΩ	22KΩ	60Ω	0Ω
5	35L6GT	0Ω	120Ω	22KΩ	140KΩ	68KΩ	2.8Ω	90Ω	.5Ω

ELECTRICAL PARTS

WIREWAY MODEL WP WIRE RECORDER

Item No.	DESCRIPTION	Item No.	DESCRIPTION
1A	12SJ7 1st AF Amp.	35	1st AF Decoupling 220K Ohms, ½ Watt
1B	1280 1st AF Amp. Used in Some Units	36	2nd AF Grid 6.8 Meg., ½ Watt
2	12SJ7 2nd AF Amp.	37	2nd AF Screen 1.8 Meg., ½ Watt
3	35L6GT Power Output	38	2nd AF Plate Load 470 K Ohms, ½ Watt
4	35L6GT Bias Oscillator	39	Tone Compensation 330 K Ohms, ½ Watt
5	35L6GT Broadcast Oscillator	40	Output Grid 470 K Ohms, ½ Watt
6A,B,C	Filter Capacitor (Electrolytic)	41	Output Cathode 200 Ohms, ½ Watt
	40-40-40 Mfd. @ 150 Volts	42	Input Transformer Shunt 4.7K Ohms, ½ Watt
7	Line Filter .1 Mfd. @ 200 Volts	43	Neon Ind. Network 120 K Ohms, ½ Watt
8	Line Isolation .1 Mfd. @ 200 Volts	44	Series Neon Ind. 220 K Ohms, ½ Watt
9	Modulation Coupling .05 Mfd. @ 200 Volts	45	Neon Ind. 220 K Ohms, ½ Watt
10	Neon Indicator Coupling .01 Mfd. @ 400 Volts	46	Recording Comp. 68 K Ohms, ½ Watt
11	Tone Compensation .01 Mfd. @ 200 Volts	47	Dummy Load 3.9 Ohms, 1 Watt
12	Output Filter Blocking .05 Mfd. @ 400 Volts	*48A	Bleeder 68 K Ohms, ½ Watt
13	Audio Coupling .01 Mfd. @ 400 Volts	49	Parasitic Suppressor 200 Ohms, ½ Watt
14	2nd AF Screen Bypass .05 Mfd. @ 200 Volts	50	Bias Osc. Grid 22 K Ohms, ½ Watt
15	Audio Coupling .005 Mfd. @ 400 Volts	51	Broadcast Osc. Grid 68 K Ohms, ½ Watt
16	Audio Coupling .01 Mfd. @ 400 Volts	52	Broadcast Osc. Screen 120 K Ohms, ½ Watt
17	Tone Compensation .005 Mfd. @ 400 Volts	53	Filter 1200 Ohms, 1 Watt
18	1st AF Decoupling .25 Mfd. @ 200 Volts	54	Filter 150 Ohms, 2 Watt
19	1st AF Screen Bypass .25 Mfd. @ 200 Volts	55	Surge Limiter 22 Ohms, ½ Watt
†20	Audio Coupling .1 Mfd. @ 200 Volts	56	Input Transformer
21	RF Bypass Power Supply .01 Mfd. @ 400 Volts	57	Output Transformer
22	Fixed Trimmer .006 Mfd. @ 600 Volts	58	PM Speaker (3.2 Ohms Voice Coil)
23	Bias Osc. Grid Cap. .002 Mfd. @ 600 Volts	59	Speaker Cone
24	Recording Compensation 1000 Mmf. @ 400 Volts	60	Bias Osc. Coil
25	Fixed Trimmer 500 Mmf. @ 500 Volts	61	Broadcast Osc. Coil
26	Ant. Coupling 50 Mmf. @ 500 Volts	62	Neon Indicator Bulb—NE51
27	Volume Control and Switch 1 Meg., ½ Watt	63	Switch (Output)
28	Series Phono 680 K Ohms, ½ Watt	64	Switch (Function)
29	Phono Shunt 4.7K Ohms, ½ Watt	65	Rectifier (Selenium) (150 mill)
30	Microphone Shunt 470 K Ohms, ½ Watt	**66	Line Dropping 390 Ohms
††31	Playback Head Load 68 K Ohms, ½ Watt		
32	1st AF Grid 6.8 Meg., ½ Watt		
33	1st AF Screen 1.8 Meg., ½ Watt		
34	1st AF Plate Load 120K Ohms, ½ Watt		

†.005 @ 400 Volts Used in Some Units

††22K Ohms, ½ Watt Used in Some Units

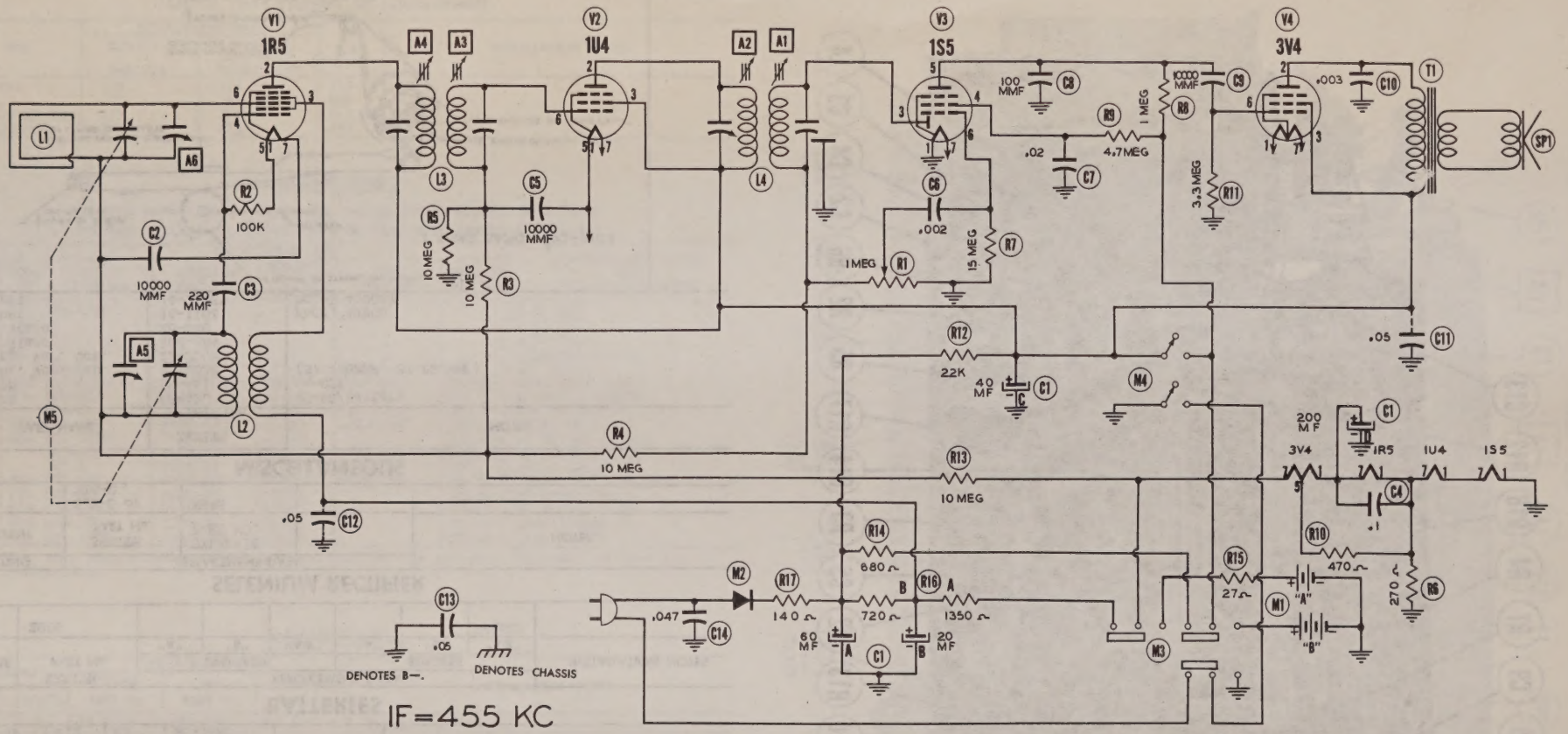
*120K Ohms, ½ Watt Used in Some Units

**This Resistor Replaces Line Connection for 220-Volt Units Only. Motor and Solenoid Are Wound for 220-Volt Use in These Units. Some Units Use a 450 Ohms Resistor.

MECHANICAL PARTS LISTS

WIREWAY MODEL WP WIRE RECORDER

Ref. No.	Part No.	DESCRIPTION	Ref. No.	Part No.	DESCRIPTION
66A	6	Turntable Assembly	98	98	Vellumoid Washer
67	77	Pickup Arm Rest	99	205	Idler Bracket Assembly
68	241	Astatic Pickup Arm	100	186	Eccentric Washer
69		(Part of 241) Pickup Cartridge	101	419	¼ I.D., External Tooth Lock Washer
70	243	Selector Switch Knob	102	403	No. 8-32 Hex Nut
71	122	⅜-32 Hex Nut	103	93	Turntable Spring
72	123	⅜ Lock Washer	104	58	Key Washer
73		(Part of Item 68)	105	59	Turntable Felt Washer
74		(Part of Item 68)	106	323	Turntable Spacing Washer
75	13	Reset Switch Housing	107	203	Worm Gear Assembly
76	47	Reset Switch, Acro Switch	108	163	Idler Bracket Spring
77	260	Type 400 Head Assembly	109	168	Spring Washer
78	430	No. 6-32 x ⅜ Binding Head Machine Screw	110	298	Shoulder Washer
79	230	Rewind Hub Screw	111	415	No. 6 Lock Washer
80	187	Rewind Hub	112	402	No. 6-32 Hex Nut
81	313	Rewind Hub Spring	113	98	Vellumoid Washer
82	190	Rewind Hub Spring Pin	114	133	Idler Pulley Assembly
83	166	Rewind Hub Washer	115	98	Vellumoid Washer
84	154	Rewind Hub Star Spring	116	55	Spring Clip
85	281	Pickup Arm Washer	117	278	Slide Bracket Guide
86	432	No. 6-32 x ½ Binding Head Machine Screw	118	197	Cam Follower Assembly
87	96	Grommet	119	1	Level Winder Slide
88	299	Mounting Grommet Insert	120	312	Level Winder Slide Spring
89	28	Chassis	121	411	No. 4 Lockwasher
90	209	Selector Switch Push-Button Assembly	122	421	No. 4-40 x ⅜ Fillister Head Machine Screw
91	129	Selector Switch Assembly	123	99	Level Winder and Solenoid Spring
92	289	Solenoid Assembly; Coil DC Resistance	124	277	"L" Bracket Assembly
		425 Ohms (1600 Ohms in 220 Volt Units)	125	136	Cardioid Cam Sub-Assembly
92A		Solenoid Bracket	126	195	Gear and Shaft Assembly
93	48	Motor Spacing, Long	127	216	Forward Motor Assembly; DC Resistance 62 Ohms (275 Ohms in 220 Volt 50 Cycle Units)
94	292	Motor Spacing, Short			
95	240	Rewind Motor; DC Resistance 43 Ohms	128	37	Shoulder Washer
		(205 Ohms in 220 Volt 50 Cycle Units)	129	415	No. 6 Lockwasher
96	99	Level Winder and Solenoid Spring	130	430	No. 6-32 x ⅜ Binding Head Machine Screw
97	55	Spring Clip			



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	2.6VDC	[illegible]VDC	65VDC	§-3VDC	2.6VDC	.1VDC	4VDC
V 2	1U4	1.3VDC	92VDC	92VDC	.1VDC	1.3VDC	.1VDC	2.6VDC
V 3	1S5	0V	0V	0V	18VDC	20VDC	0V	1.3VDC
V 4	3V4	4VDC	87VDC	92VDC	0V	5.2VDC	0V	6.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†800Ω	†850Ω	100KΩ	*	5Meg.	*
V 2	1U4	*	†800Ω	†800Ω	5Meg.	*	9Meg.	*
V 3	1S5	*	Inf.	850KΩ	†4.7Meg.	†1Meg.	15Meg.	*
V 4	3V4	*	†1.5KΩ	†800Ω	Inf.	*	3.3Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M2

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	11KΩ	3.6Ω	700Ω	.4Ω	206-658	A-3879	A-2932	RO-16	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM	V. C. IMP. 3.6Ω	49-658	ST-113 † MOD.P4-X	4A1 †	† Remount output transformer.
SP2	CONE DIA. 3 7/8"	V. C. DIA. 9/16"	208-658			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.2Ω		S-15434		
L2	Osc. Coil	1.2Ω	5.5Ω	S-15429	14-1060	
L3	Input IF	20Ω	21	95-1132		
L4	Output IF	21Ω	21	95-1133		

BATTERIES

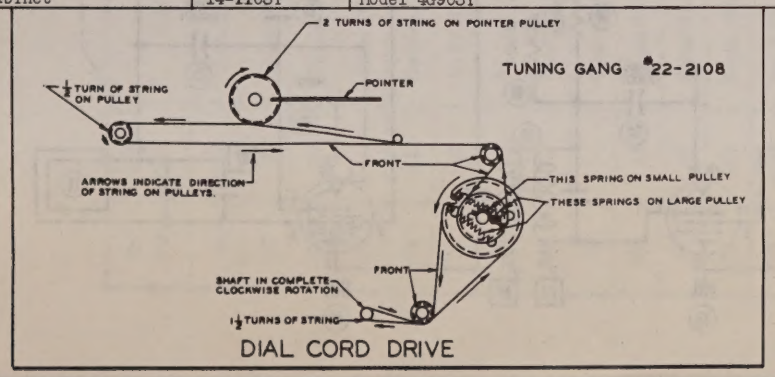
ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	9V "A" 90V"B"	Z909						F6A60P	

SELENIUM RECTIFIER

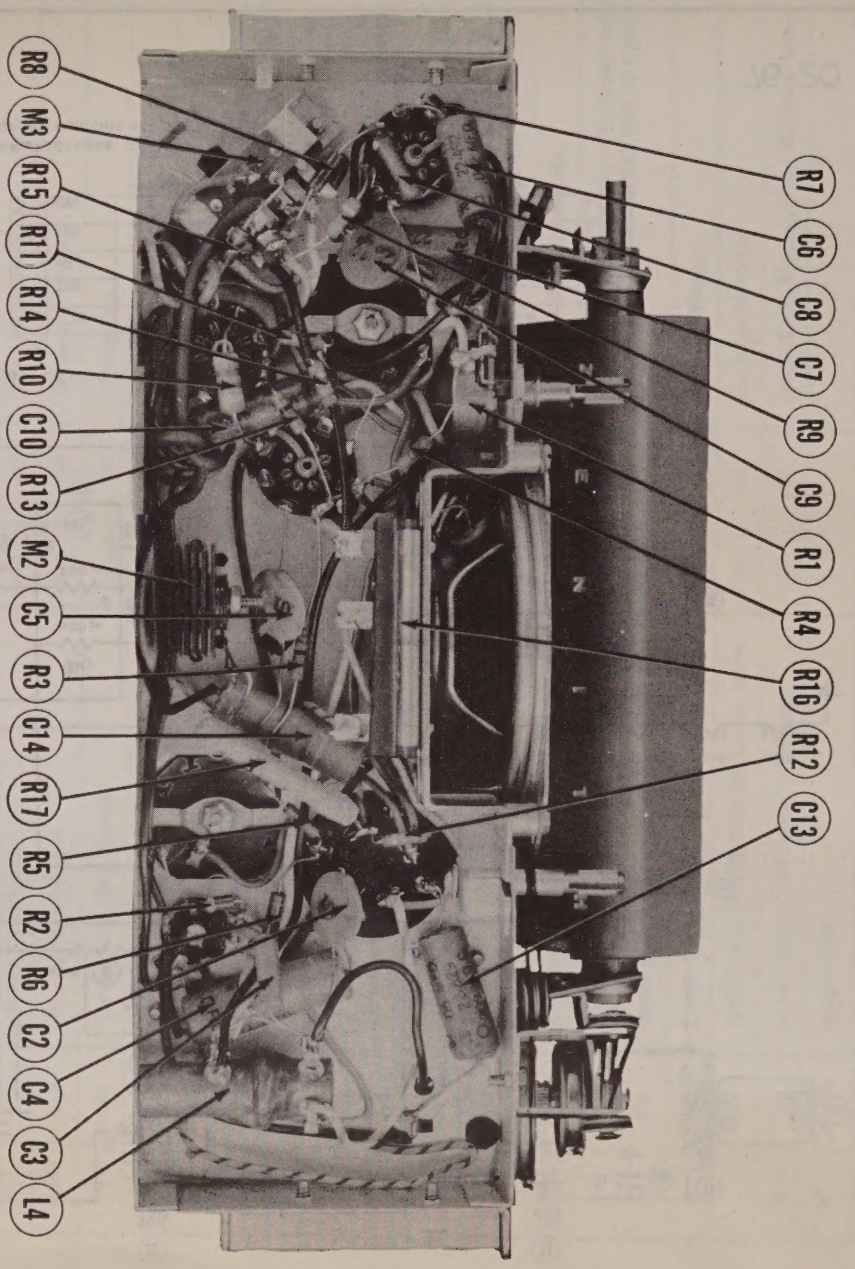
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	ZENITH PART No.	SYLVANIA PART NO.		
M2	.057A	212-5 or 212-2	NB-5		

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch	85-450	AC-DC/Battery
M4	Switch	85-451	On-Off
M5A	2 Gang. Var. Cap.	22-2032	(37-496MMF, 37-225MMF)
B	2 Gang. Var. Cap.	22-2108	
	Dial Glass	192-124	
	Dial Scale	26-420	
	Cabinet	14-1103	Model 4G903
	Cabinet	14-1103Y	Model 4G903Y


2 TURNS OF STRING ON POINTER PULLEY
TUNING GANG #22-2108
½ TURN OF STRING ON PULLEY
POINTER
FRONT
ARROWS INDICATE DIRECTION OF STRING ON PULLEYS.
THIS SPRING ON SMALL PULLEY
THESE SPRINGS ON LARGE PULLEY
FRONT
SHAFT IN COMPLETE CLOCKWISE ROTATION
1½ TURNS OF STRING
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ZENITH MODEL 4G903

DATE 11/49 SET #76 FOLDER 20

ZENITH MODEL 4G903

PARTS LIST AND DESCRIPTIONS

ZENITH MODEL 4G903

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET.-AVC-AF Amp.	1S5	1S5	6AU	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	22-1741					◓ Filter
B	20	150						▲ Filter
C	40	150						■ Filter
D	200	10						Filament Bypass
C2	10000		22-3	P488-01	GT4S1	821-01	36C1	AVC Filter
C3	220	500	22-182	1468-0002	5W5T2	GP2K-220	1FM-32	Osc. Grid Cap.
C4	.1	200	22-827	P288-1	GT2P1		TM-1	Filament Bypass
C5	10000		22-3	P488-01	GT4S1	821-01	36C1	AVC Filter
C6	.002	600	22-492	P688-002	GT6D2	GP2M-002	TM-22	Audio Coupling
C7	.02	200	22-1386	P488-02	GT2S2		TM-12	AF Screen Bypass
C8	100		22-1669	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C9	10000		22-3	P488-01	GT4S1	821-01	36C1	Audio Coupling
C10	.003	400	22-326	P688-003	GT6D3	GP2M-003	TM-23	Output Plate Bypass
C11	.05	200	22-829	P288-05	GT2S5		TM-15	RF Bypass Note
C12	.05	200	22-829	P288-05	GT2S5		TM-15	RF Bypass Note
C13	.05	200	22-829	P288-05	GT2S5		TM-15	Line Isolation
C14	.047	400	22-1775	P488-047	GT4S5		TM-15	Line Filter

Note . Used only when other than Zenith non-inductive electrolytic condenser is used for replacement.

CONTROLS

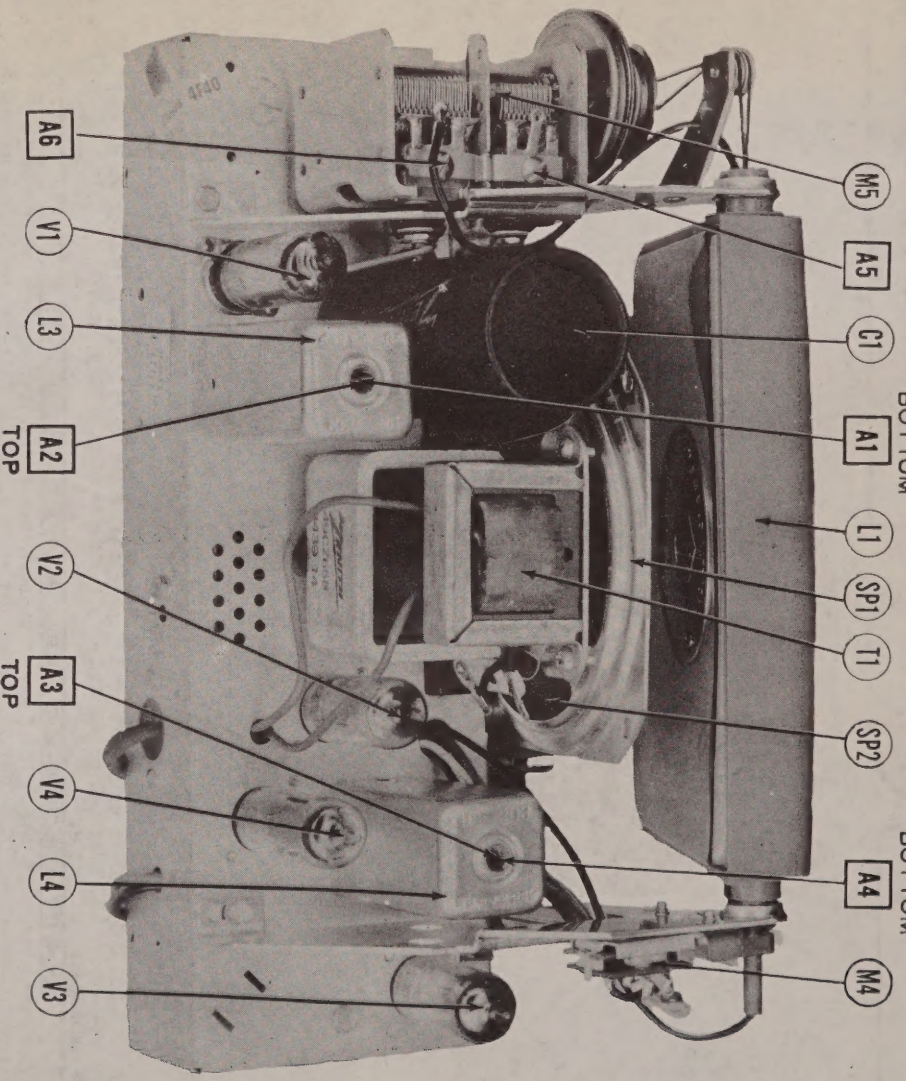
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½	63-2013	Q13-137	15/16-63-Z	Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	63-1870	BTS-100K	Osc. Grid
R3	10 Meg.	½	63-1954	BTS-10 Meg.	AVC Network
R4	10 Meg.	½	63-1954	BTS-10 Meg.	AVC Network
R5	10 Meg.	½	63-1954	BTS-10 Meg.	AVC Network
R6	270Ω	½	63-1761	BW-½-270	Filament String
R7	15 Meg.	½	63-1961	BTS-15 Meg.	AF Grid
R8	1 Meg.	½	63-1912	BTS-1 Meg.	AF Plate
R9	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AF Screen
R10	470Ω	½	63-1771	BTS-470	Filament String
R11	3.3 Meg.	½	63-1933	BTS-3.3 Meg.	Output Grid
R12	22KΩ	½	63-1841	BTS-22K	Filter
R13	10 Meg.	½	63-1954	BTS-10 Meg.	AVC Network
R14	680Ω	½	63-1778	BTS-680	Voltage Dropping
R15	27Ω	½	63-1719	BW-½-27	Bias Network
R16A	1350Ω	5	63-2010	ABA-2000*	Filament Dropping Filter Wire Wound
B	720Ω	5			
R17	140Ω	3	63-1999		Surge Limiter Wire Wound

* Set slider at 700Ω from one end.

CHASSIS—TOP VIEW



ZENITH
MODELS 4G903, 4G903Y (Ch. 4F40)
(BATTERY-LINE OPERATED)

ZENITH
MODELS 4G903, 4G903Y (Ch. 4F40)
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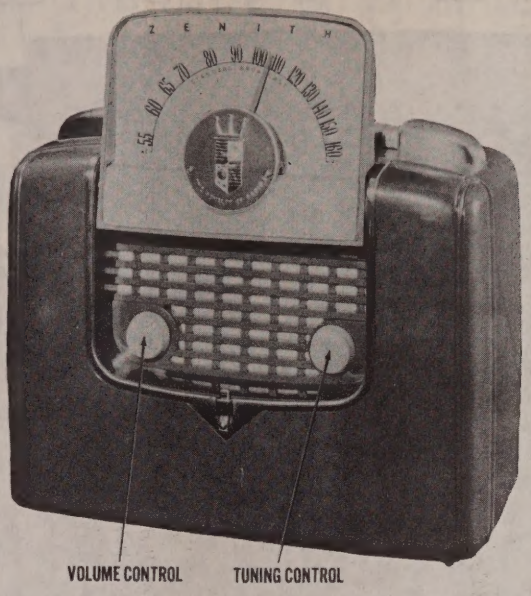


ZENITH
MODELS 4G903, 4G903Y (Ch. 4F40)
(BATTERY-LINE OPERATED)

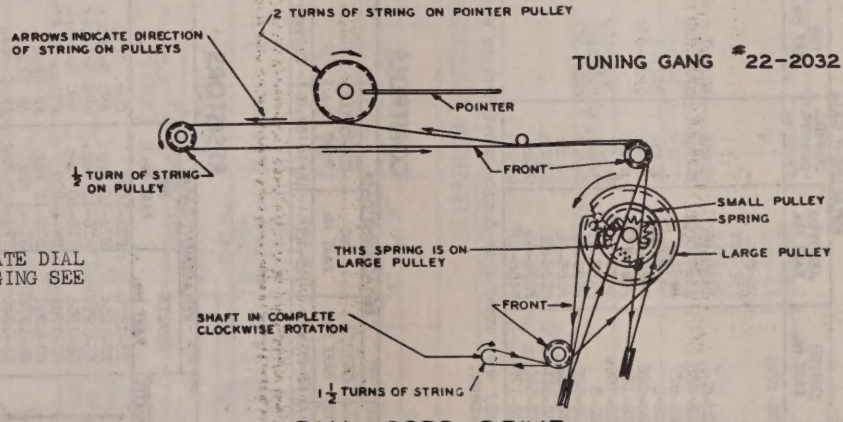
TRADE NAME	Zenith, Model 4G903, 4G903Y (Ch. 4F40)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1S5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.13 Amp. @ 117 Volts AC or 48MA @ 9 Volts DC and 15MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of mixer section of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.		Loop	1600KC (400~ Mod.)	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC (400~ Mod.)	1400KC	"	A6	"



DIAL CORD DRIVE

FOR ALTERNATE DIAL CORD STRINGING SEE PAGE 3.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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